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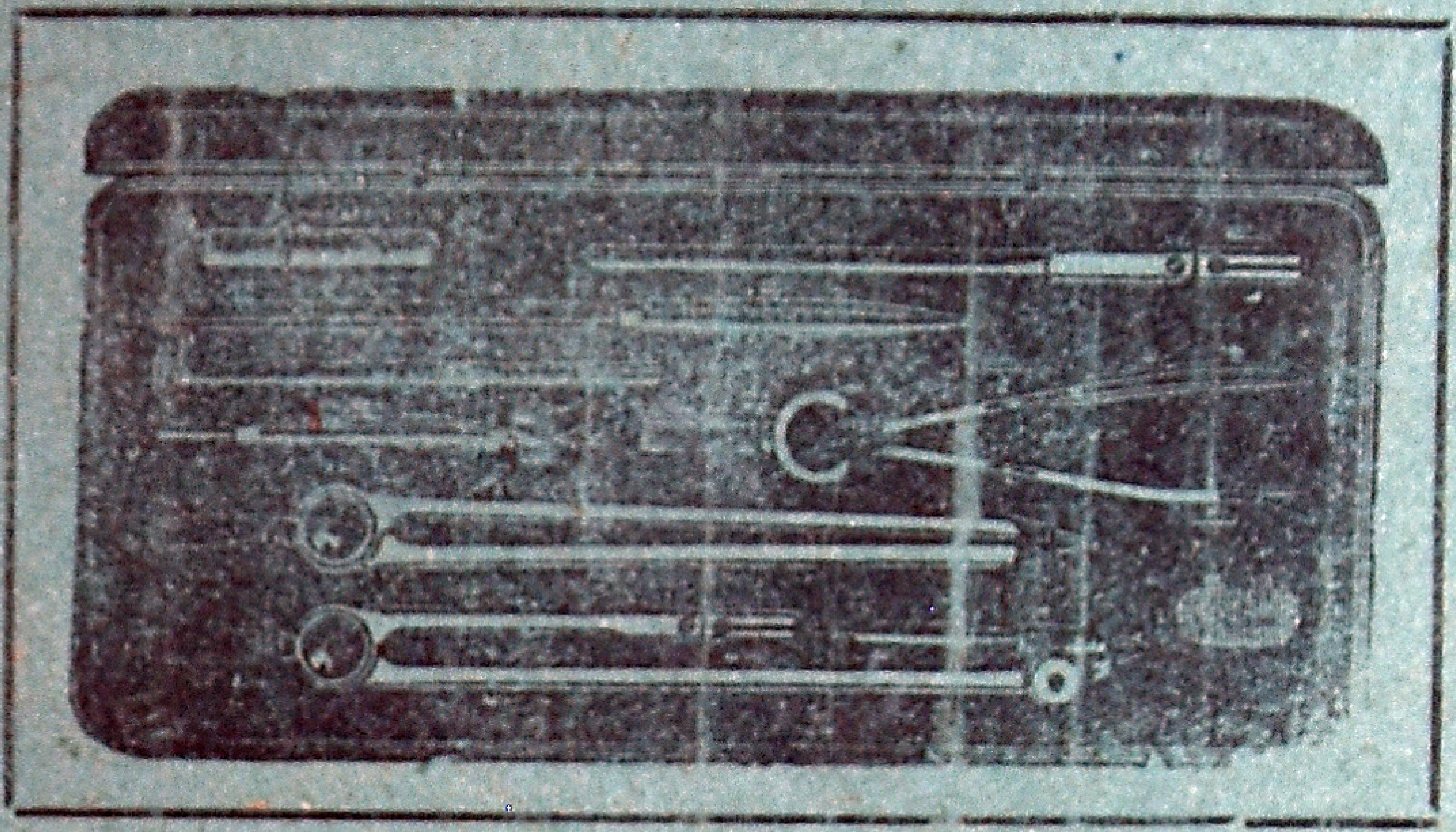

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The Madras Forest College Magazine.

Vol. V. **March 1921** **No. 3.**

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THE
Madras Forest College Magazine.

Published Quarterly.

Vol. V. March 1921. No. 3.

More Bachelor Days.

First of all Knol-khol, a little little station in a corner of India, populated profusely by, I am sorry to say, unpolitically-minded Indians, pathetically contented with the law and order which, one notices, are to be found still in the more desirable places: populated sparsely by members of the Knol-khol Club.

Behold club-members at even-tide in the cold weather, gathered in suitable chairs beside the tennis court, imbibing perhaps refreshment, the day's work and tennis duly performed or executed. Ladies first: Mrs. Owen in a cosy fur coat, for it is cold in the cold weather, looking nice. This she cannot help No more ladies. Evan, her son, mature age 5½ years, restless party, drills the tennis *chokras*, with martial strains from the enormous gramophone of the Little Forest Officer.

Wilcox who is we think to all intents and purposes a Wizard, sits also. He is our Police Sahib. A good bird. Besides being good, brave and handsome, he can furthermore produce from nowhere billiard balls and undeniable coloured handkerchiefs, wafting them at will into nothingness again. Never was such a nice man! Alfy and I think him to be of the seed of Abraham. Yet again sits Alan Hughes, the "Big" Forest Officer in our Indian parlance. The long-arm-chair groans beneath substantial yards of him, and whilst it groans Alan snorts, for the argument in hand has taken an unfavourable turn. (Who can argue with a lady?) Nearby and to some extent in a sit-up chair is coiled the frame of our Alfy Higgins, the "Little" or "Assistant" Forest Officer, longer but more attenuated than Alan. This youth does little harm, is proud of "Bogstoat" his dog, and admires Alan Hughes for a thousand reasons. Uncomplaining, daily he shoots snipe for Alan, with whom he dwells. He would also die two or three times a day for Mrs. Owen, unnecessary as such a course would appear. (So would I or Wilcox or Alan or Owen; — not that we wish to make a song about it of course!)

From another long chair, over the bristles of a somewhat walrus-like moustache, Owen regards the manoevres of his youngest son. Whiles he contributes a broadside to help us in the unequal contest; "Women" he says, "are meant to pay our calls, write our letters and" — with sternness, "to keep away from my office tape." "Nice men only need string" replies Mrs. Owen. But it is evident that a hit has been scored.

We follow up the advantage. Alan's eyes gleam with argument and enthusiasm behind shooting spectacles, vast, toric. With intense scorn, "Ladies *suppose* for instance that they know about coffee making. Yet the only good coffee in Knol-khol is made in my house." Alfy nods in support. "We make it," continues Alan, "in the new proper kind of coffee thing: it whistles when the coffee's ready."

"Big babies!" murmurs Mrs Owen, rising from her chair. She calls the small son and envelopes him in overcoats and mufflers of vivid

LIBRARY.

(a)

hue. “An revoir! You’ve not forgotten we’re dining with you to-night? So at last we’ll taste real coffee, Mr Hughes!” Mrs.Owen departs on her way: she smiles in view of the fact that Owen and the little bachelor flock are evidently in sound health, as well as amused.

* * * *

During soup and fish, conversation (as we know it) was sustained by our host and his lady neighbour: exchanging for example recollections of money lost on various British race courses. Wilcox, Alfy and I just ate, biding our time. Owen ate quietly. (Indeed many men of his service eat quietly).

It is an article of suspicion amongst us children that Owen, Mrs. Owen and Hughes are Welsh. By the time of the arrival of roast mutton we were engaged, but with moderation and regard for the feelings of others, upon racial differences. Alfy’s opinion of David Lloyd-George was in many ways favourable, Wilcox also finding him to be the exception that proves the rule about Welshmen. Again, Owen and Hughes had something to say about Whitehall or Whitechapel Yids. Alfy, it seems, combines agility with innocence. He had not long since interviewed the Great Men of the India Office, escaping with a whole skin. He favoured us with his views: they were, in his opinion painstaking, worthy and intelligent men. (There was a visible rise in Wilcox’ temperature.)

Adverting for safety’s sake to the subject of bee-keeping, it appeared to me that favourable weather was in store for us. One of the Simla weather-man’s depressions had hung about the Bay long enough to excite comment. Now it has disappeared. “And who *made* it to disappear?” enquired Our Wizard, speaking I thought with his mouth full. “Je!” he said; and resumed the conflict with some jelly We snorted in chorus.

"My chokra's the lad for making things disappear," said Alfy thoughtfully. "When I was departing from the Bensleys in Madras last month my chokra packed up and I ran upstairs to see if everything was right. I said 'Have you packed the soap?' 'Yessar' said he. 'Thieving little stoat!' I exclaimed, 'that 's Mrs. Bensley's soap. How dare you pack it? Somewhat abashed he extracted the soap, and I descended to say goodbye, feeling I'd done my duty. Two days after I got back here came an apologetic enquiry from Mrs. Bensley: had my servant by any chance packed a face towel and bath towel that were not mine? 'Chokra!" I said in a Terrible Voice, and called for all my towels. Sure enough there were Mrs. Bensley's two! What is one to do?"

"A valuable lad" said Owen, "With such a servant......' he was interrupted by blasts from the coffee engine in the pantry. The shrill melody was however overwhelmed immediately by a canine altercation in the premises. Hughes' assistant rose dutifully from his place. "Sorry! the usual battle," he murmered, proceeding on his way to mediate. A moment later he returned with a pleased look in his seemingly innocent eye.

In parenthesis and at this critical juncture I must express disapproval of his behaviour. I am sure that Alan must share my opinion here was this man — Alfy Higgins — betraying in the most heartless way the kind master who had done so much for him.

Mrs. Owen fluttered from the table, and we with her: in the back verandah an uproar was proceeding. Alan's terrier was defeating successfully the Bogstoat, a much larger animal of uncertain pedigree. So far so good. On an improvised stove we beheld a venerable saucepan, in which simmered the much-advertised coffee. On a store-box nearby, oblivious of dog-fights or intruders, sat Alan's ancient butler.

At intervals he blew upon a whistle, presumably that of the coffee machine.

* * * *

Said Mrs. Owen lightly " What about a little more music, Mr. Hughes?" and tripped away to the piano.

A. M.

Acacia Arabica, willd. (The Babul.)

The area under babul in this presidency when compared to Sindh seems to be rather small, its presence restricted to a few localities, its growth poor and unimportant from financial as well as sylvicultural points of view, that it has failed to demand any special attention, notwithstanding the great strength, durability, and hardness of its wood and is seldom used otherwise than as fuel. It is however eclipsed to a great extent by the presence of such useful and important species as Teak, Sal, Dalbergia etc which grow in abundance here. This article is therefore written with a view to invite opinions from the readers of the magazine specially with regard to its coppicing power; For it will be of the highest interest and advantage to the writer to know why it behaves so differently in Southern India from the Northern.

Distribution :

Though Babul has a wide distribution and a very wide range of temperature for its growth as it is found thriving as far north as "Jhelum" and in Coimbatore in the South, yet by far the best and typical Babul Forests are met with in Sind which is called its "home". The total area of Babul Forest in India is taken at 276,000 acres of which Sind alone contains 172C00.

Its demands and habitat.

Babul being a shallow rooted species wants the subsoil moisture to be near its surface, but at the same time wants a well drained soil, consequently, it is found at its best in Sind on alluvial soils fringing the banks of river or water courses, where all its demands are adequately met with. Next to alluvial it likes black cotton soil where it comes up, spontaneously and is satisfied with a moderate rainfall of 20 inches in the absence of flow irrigation. It is a strong light demander and therefore it is usually found coming up on cleared and formerly cultivated areas as in the case of the Madras Forest College estate.

Sylvicultural treatment :

Babul being of a gregarious nature usually forms a pure crop and if the local conditions are favourable to its growth its regeneration too offers little difficulty. In Sind where it has met with ideal conditions it is being worked under " clear felling " method on a rotation of 30 years. The cycle can be raised to another 10 years, but the demand for large sized timber is not keen enough to warrant such a change. The rotation adopted in The M. F. C. Demonstration Forest coincides with the one in Sind but the former is being treated under Shelter wood compartment system. The present working is adopted more to suit the purpose of instructions to the students than the actual requirement of the existing crop. Babul being a good coppicer here simple coppice supplemented by broad cast sowings would have yielded equally good results.

I had opportunities to visit our Demonstration forest. It was no doubt a revelation to me to see babul coppicing so profusely here; on 17th October 1919 the area worked in September 1918 was full of coppice shoots, the number of shoots per stump varied from 2—9 with an average of about six and their height from 5′—6″ to 8′—4″ with an average of 7′—4″. But failing sufficient data as to the rate of growth in after years and the number of rotations upto which a stump can retain its coppicing powers it is not possible to fix the best rotation for coppicing babul or to compare the results with the regeneration from seeds. But it is said that babul responds to coppicing satisfactorily only when it is under 15 years of age The tree is said to pollard well and this was the system under which the Sind forests were being managed in the past for supplying fuel to Railway Company.

Reproduction:

Babul reproduces itself profusely from seed and in favourable circumstances its regeneration is easily attained without any due waste of time or labour. In Sind mere broad casting of seeds in wet soils after the river has subsided gives satisfactory results But if the area has been allowed to dry and the seed is sown late, the ground is ploughed before broad casting. While in areas away from the benefit of river inundations the regeneration is effected by sowing seed with cereal crop under agri-cum-Forestry system. Babul Seeds when passed through cattle germinate quickly and well even under adverse circumstances This statement is borne by the fact that healthy regeneration of Babul is seen in cattle sheds and places frequented by cattle even when there is no trace of babul near.

Babul reproduces itself beautifully by coppice, on The Madras Forest College estate and is said to do so in several districts of Madras and United Provinces and in Surat district of Bombay.

This peculiar behaviour of babul seems to me to be confined to those parts of the country where the climate is more or less equable throughout, or there is no such sharp difference between summer and winter as in northern India.

Black cotton soil too seems to be responsible to a certain extent for its coppicing; but the exact way in which climate and soil play their part to bring about this change is a mystery to me. Nevertheless I believe that the coppicing is partially due to the incessant activity of the tree, as a consequence of an equable climate and partially to the presence of certain minerals in Black cotton soil which stimulate the production of coppice shoots. For, the black colour of Black cotton soil is not due to humus as is usually understood but to certain mineral salts present in it.

Shape and growth.

A moderate sized to a large tree, with a large spreading, much branched, everg-reen crown affording a dense shade. The bole is comparatively short, while the bark is dark brown with deep longitudinal cracks. The characteristic feature of the tree is its straight white sharply pointed thorns. It is a fast growing tree during its early life and under favourable circumstances in Sind attains a girth of about 2 ft. in five or six years; while its average girth at 30 years is about 4 ft. But trees of 10—14 ft. in girth and about 50-60 ft. in height, with a clean bole of 30 ft. are also met with in Sind. On our Forest college estate the tree forks very low, and consequently gives little bole practically. The trees are about 30 to 35 ft. in height. Forking teems to be the distinct feature of the tree here even in its seedling stage while in Sind it retains its distinct main stem even upto its pole stage when it reaches a height of about 25 ft.

Injuries to which the crop is liable :

(*a*) *Fire.*

Fire is its first enemy as the alluvial lands which form its habitat are almost always covered with grass (*Saccharum spp*) while the babul is young. The damage done by fire is therefore wholesale and permanent as the tree does not coppice there. When once allowed to reach the sapling stage however it quickly and completely exterminates grass with its dense shade.*

(*b*) *Grazing.*

Camels and goats are its most dangerous enemies as they are indiscriminate in their tastes preferring young shoots to trees. They even damage sturdy saplings, camels owing to their length of neck and goats by standing on their hind legs Moreover they are said to have a poison in their saliva so that the tip of the browsed shoots gets blackened and the seedling fails to grow in size any more but assumes rather a bushy from.

(*c*) *Frost.*

Babul is very susceptible to injury by frost during its early stage. In Sind therefore it is seen growing under the shade of *Tamarix* which serves as a nurse to the young seeding, but subsequently when babul is established it out-grows its nurse and ultimately kills her under its shade*

(*d*) *Wind.*

Babul being a shallow rooted tree is easily uprooted by a very strong wind but this is particularly harmful immediately after the set of River Indus ; for the soil then being wet and soft the trees are very easily uprooted and the damage done is considerable.

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* The poor growth of plants under the shade of, or near a babul tree is believed to be due more to the toxicity of the babul than the exclusion of light. [EDITOR]

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(e) *Illicit cutting.*

The surrounding population are responsible for this damage. The tree being of very great use for agricultural purposes is eagerly sought for and removed whenever required. Cattle owners are responsible for lopping off branches for their cattle. The collection of pods and honey also result in lopping of branches.

Major Products.

(a) *timber* (b) *Firewood and charcoal.*

(a) *Timber.*

This is obtained from the heart wood which is reddish brown mottled with dark streaks. The wood is hard durable and heavy, weighing 54 lbs. per cft. while its value of P (co-efficient of the transverse strain) is taken at 884 which is much higher than that of teak or sal which is 600 and 796 respectively It is largely used for house posts in various parts of the country and was formerly used as sleepers by Railways and in Gun carriage Factories, In Sind it is now chiefly used in the construction of carts and agricultural implements. The price realized per cft. varies from 8 annas to a rupee.

(b) *Fire wood and charcoal.*

All wood that is not used as timber is turned into fuel billets. All heavy logs too costly to be coverted into fuel or transported are made into charcoal on the spot. The fuel as well as charcoal have a great a calorific power and are very much in demand. The market price for fuel varies 8—12 annas per maund of 80 lbs. but during the war it exceeded one rupee even in large towns like Karachi.

Minor Produce.:

Pods.

The pods form an important item of revenue in Sind and are used as cattle-fodder.

In the year 1916—17 a range in Hyderabad Division yielded something like 12000 rupees from pods alone. The pods are used in tanning locally, partly because of their tanning properties and partly because of the colour they give to the leather.

Lac:

Sind forests yield a large quantity of lac from babul. The revenue realised is never steady owing to fluctuations in the Lac market but in favourable years it goes to over a lakh of rupees.

Gum:

The gum of Acacia arabica is an important item of commercial product. It exudes sportaneously or from wounds in the bark of the tree and is obtained in the form of small lumps of varying forms and sizes. The Gum as well as honey are not collected departmentally but by villagers free of charge and can be had in large quantities in the bazaars.

The gum is extensively used for dyeing and cloth printing. It is also added to paint and white wash on account of its adhesive property.

K. R. Moorjani,
1919—21 Division.
Madras Forest College.

Epicormic branches.

When a tree is wounded, it tries to heal itself in more than one ways, such as formation of new cortex, production of a callus etc. The stimulation of dormant buds is also to be reckoned amongst the regenerative phenomena which compensate for what is lost. These buds or eyes are otherwise called "preventitious buds." These are different from adventitious buds. The former have their existence in the stem from the very beginning, whereas the latter are formed afresh under certain circumstances in places where they are not naturally expected to be found. We are now to deal with the preventitious buds.

These buds are to be found in axils of the bud-scales at the base of the shoot. They lie dormant for hundreds of years and are inactive to all out-ward appearaces. "It is only as regards apical growth that the preventitious buds are inactive, for they display a peculiar form of growth in length, which Theodore Hartig has called "Intermediary growth." Each year the delicate vascular bundles, which extend to the medulla of the buds, increase in length to the same extent, as the portion of the stem on which the buds are situated increases in thickness. The cambium of the axis of the bud, which divides at the same rate as the common cambium of the stem, annually produces two portions of tissue, namely, a larger one on the inside, the length of which corresponds to the breadth of the wood-ring and a smaller one on the outside equal in length to the thickness of the new bast. A cambium region persists between these two portions till the dormant eye dies, when the bud axis, which is disposed at right angles to the main stem, ceases to grow and is overgrown and enveloped by the advancing wood-ring. Should these buds be stimulated to form shoots, they produce their own growth of wood, and both they and their medulla form an acute angle with the main axis of the stem" Thus it is clear that these branches come from the very centre of the heart-wood and examples are not wanting in the case of teak of such formations. In some species the growth inside the stem is so peculiar as to form a kind of wood-ball called "spheroblast." This has no connection with the wood of the stem and comes off by a slight pressure. (But, fortunately, in the case of teak these cannot be detached) These branches not only reduce the artistic beauty of the timber, but also take away much of the nutrition which ought to go to the enrichment of the main stem. These are to be specially avoided by careful tending in the important timber species such as teak.

We shall now briefly discuss the causes which lead to the formation of these branches. The examples cited are from the observations made in Nilambur Teak Plantations It is generally held by some that the light from the sun, when if falls on stems, stimulates the growth of the dormant buds. There are reasons to believe that it is not so. No light is required to stimulate the growth of a seed buried in earth, What is required is, moisture, heat and the nutritive material in the seed itself. It grows. There is little or no chlorophyll in the very young shoot. In some instances the chemical action of the rays of light is so intense that the young plant dies. That is why, the leaves of the young shoot are not horizontal but present as little of their surface as possible to the sun. It is the nutritive matter in the plant that keeps it alive till the leaves are able to manufacture chlorophyll corpuscles. It is thus clear that light comes into play only after the buds develop and come out of the stem and not until then.

Similar is the case in coppicing and pruning. The shoots that develop in these cases are in no way different from the epicormic branches. The nourishment that was feeding the stem and branches, now goes to the dormant buds and stimulates their growth. When once the buds see light, they grow at a rapid rate in its presence.

For the same reason the saplings of teak have many epicormic branches. On account of the fertility ot the soil the upward pressure of the sap is so great that the buds are stimulated and shoot out. These develop into larger branches if light is allowod to fall on them which is of course, detrimental to the growth of timber. Hence close planting is recommended; the buds even if they come out would then die off on account of the shade all round.

What is true for saplings is also true for a larger trees. Some isolated trees exposed to the full glare of the sun have clean boles for the simple reason that their crowns are fully developed. The sap from the roots is completely elaborated by the leaves and the stem is nourished by it No stimulation goes to the dormant buds. On the other hand, in the case of trees with crowns not in proportion to the length of the stem and where the crown is damaged, epicormic branches arise although no direct light falls on the stem.

The defoliation of trees is caused in many ways such as late frost, fire, wind break and defoliating insects. The last one forms the chief cause in the Plantations at Nilambur. In cases where the defoliation is not complete, the wood may slowly recover. Some trees reclothe themselves with enough foliage during the next season and the epicormic branches formed during the interval fall off being tender and no longer needed. But if the foliage does not appear soon, the results are almost fatal. During the year of defoliation, the reserve plant food is used up by the cambium to form the wood required for that year and the growth stops during the next year. The lack of shade induces a higher temparature in the tree and this combined with the want of plant food deteriorates the inner cortex and the bole dies. If the tree regains its vigour after two or three years, the epicormic branches already formed do not fall off but become stronger and stronger and at last they persist even after the crown is fully developed.

In fine, the preventitious buds are stimulated to form vigorous shoots on account of the large supply of nutriment and the epicormic branches develop into large ones in the presence of light just as any other branch.

M UMAPATHI MUDALIAR.

Fire protection in the Eastern timber working forests of Coorg.

Fire is a dreadful enemey of foresters as all the energy and money spent on pretection against fire throughout the year, may be wasted if the forest suffers a few hours' display of fire, and not only so, but all the valuable material of the forest may be burnt, the soil impoverished, and natural regeneration very much impaired. A period of anxiety, uncertainty and suspense is passed through by those that are concerned, during the whole fire season. If any one cares to glance at the Mudumalai forest and study its present condition it will at once strike him how fire has reduced this forest to such a disastrous state that it will be very difficult to restore it to its former condition. I don't hesitate to say that almost all deciduous forests are victims to fires in some form or other year after year. The Forest Department has devised many schemes according to the condition of the locality for over-coming this difficulty, and yet in many cases it is far from successful, though not in all; this failure, in many cases is due to the mismanagement on the part of the subordinates concerned in that they fail to evoke the co-operation of the neighbouring villagers; so much so that the forests are often wantonly and mischievously burnt, I am sure it would not be out of place to throw some light on the system of successful fire protection adopted in the eastern timber working forests of Coorg, and to inform the numerous readers of this journal how these forests are protected against fire. I am not going to tax my readers, patience by informing them how 'the fire lines are cut, and burnt at the proper time, as this is routine work in the department, but I am going to impress on the readers the scheme introduced about 2 decades ago by Mr. C. D. McCarthy, then Deputy

Conservator of forests. According to his scheme all fire lines should be cut and burnt before the end of February, as is done elsewhere; then all the Kurubars are induced to devide themselves into as many gangs as there are fire blocks, this division being done according to families. These gangs are made to live temporarily in the apportioned blocks till the fire season is over and the whole family or gang is held responsible for the protection of the block; the wages earned by them for successful protection is paid to them according to the area protected by each family, but not according to the miles of the fire line or as monthly pay as is the case elsewhere. Each family consists of 6 – 7 male members, and one man among them goes on patrol duty in turns every day, and others for their routine forest work, and the wages earned are equally divided among themselves, so that there is no trouble in getting ample food, else the man who is put in charge of the fire line will have to suffer as the remuneration given is too small for subsisting during the whole season. The success of the scheme is entirely due to the willing co-operation of *the hill tribes* as any amount of forced labour or coercion will not only not contribute to successful fire protection but also will induce them to imigrate to other neighbouring forests rendering the labour problem much worse. The remuneration paid is too small and insufficient even for a month for the whole family. Since these people are settlers in the forest their women and children will not get any work during the fire-season as all works, except timber conversion are over before the fire season. The department is therefore obliged to support the family in this season as otherwise they may go away from the forest in search of labour elsewhere. The reward they get for the successful protection of their apportioned blocks is as follows:— Rupee one will be paid for every 100 acres and this amount will be paid in three ways, $\frac{1}{3}$ of it in cash, $\frac{1}{3}$ in cloth and the balance in paddy. The first two instalments will be paid after the fire-season is over and the last one just before the next fire season, so that they may have something to eat during the season. Paying them in this way will induce them to be very careful in their duties as otherwise they will suffer the reduction of payment and sometimes they don't get any thing at all if they allowed their blocks to be burnt.

To avoid local fires the forest will be closed against carting and shooting during the season, except in the current year's coupes and along main transport routes. Formerly there was no exception to this rule and in addition, all works used to be suspended, so that there might not be any chance for outsiders to come and stop inside the forest. But recently after the new working plan was introduced it was found very difficult to finish all works including fellings before the fire season; also the bulk of the timber sold was left uncarted, and this made the timber merchants hesitate to buy timber. To avoid all these difficulties, the above concession was extended to the purchasers. Neither the cartmen nor the coolies are allowed to kindle fire inside the forest, but in certain centres they can do so in the cool portions of the day. To see that the rules are observed to the very letter, beat Guards and Watchers are posted in those places where these people are allowed to light fires for their cooking purposes.

Though the above arrangements are carried out efficiently, yet fire makes its way to the forest by some way or other at long intervals. Fire, if any, always enters through the Eastern frontier where arrangements have been made to check the fire coming from the Mysore forests which are subjected to wild fire every year in spite of attempts made to check it. Sometimes the whole forest around the Coorg boundary may be on fire and in such cases to protect the forest is an impossibility as the protective staff is inadequate to cope with the work along the entire frontier; sparks emanating from dead bamboos and Pterocarpus Marsupium seeds may be thrown to a great distance where the tall dry grass takes fire. This spreads rapidly owing to the severely blowing wind. Though the fire enters from the Mysore forest occasionally yet it does very little damage to the Coorg forests as there are many check lines (interior) close to the frontier, and also special attention is paid to this boundary as it is the only source by which fire can enter. Sometimes local fire occurs and it does great damage to the forest as it is very difficult to put it out owing to the thick and tall growth of grass; if such fire occurs in the hottest part of the day it consumes a large area before it can be coped with. Though this sort of fire may sometimes be due to negligence either on the part of cartmen or workmen the Range Officers are inclined to attribute it to incendiarism, and malice *among the hill tribes themselves*. I myself always suspect the Kurubars as they are apt to do all this mischief to satisfy a grudge against other gangs. In 1911 there was a big fire case and the culprit could not be detected as the authorities never suspected the Kurubars. As there was no chance for out siders to come from long distances they could not on any grounds be suspected, and so they attributed the fire to incendiarism. In 1918 I was transferred to one of the Sub Ranges of these forests and there the head of the gang told me that the fire of 1914 was caused by a Kurubar Guard on account of malice which he bore towards another. To take vengeance the former set fire to the block of the latter. I did not believe this story then, but afterwards I had to believe it to a certain extent as I saw many other trifling instances of this sort Now it is a popular belief among the Range Officers that the Kurubars are responsible for nearly all such fires, but even so it is not possible to single out the actual culprit from the gangs. In rare cases they may wish to convert the forest into hunting grounds and therefore burn it as otherwise they cannot easily penetrate the thick growth I don't attach much importance to this story as I believe they never do this for the sake of pleasure. It is quite probable, however that they may set fire to the forest when they are dissatisfied with the local authorities, owing to what they consider to be bad management on their part

N. M. KARUMBAIYYA,
Senior Division.

Timber extraction in the Doni Valley, Chenat Nair Reserve (Central Coimbatore Dn.)

This forest area partly owing to its proximity to a town like Palghat — a centre of large consumption and trade—partly to the variety of good timber species that it contains, has always demanded special attention at the hands of the Forest Department. But as a major portion of the area is comprised of "Ghat Forests" rather difficult to get at and work, owing to the steepness of the slopes and unevenness of the country, only located fellings were done. The accessible outer slopes were worked for fuel under 'coppice with Standards' method of treatment. It was only last year that the rich ever green area was opened for concentrated fellings and brought within easy reach by the construction of drag paths and earth slides, thus facilitating the transport of timber. We had therefore the best opportunity to study practically how the working of such rich but remote "Ghat Forests" shut out as it were from the influence of man by their peculiar situation could be made practicable and financially sound. Full advantage has been taken of the natural slopes of the hills in converting them into drag paths and slides in order to obtain rapid and cheap transport. The method of bringing logs from felled area is as detailed below :—

Logging and dragging by men :—

The tree when felled is at first logged. The length of the log depends upon the straightness and cleanness of the bole, but the maximum is fixed at 35 feet and the minimum at 14 feet, so that when a log comes down to the bottom a maximum of 32 feet and a minimum of 12 feet may be got The extra length is provided for wear and tear in transit. It is then snouted at the butt-end to prevent its kicking the skidders out of their places during dragging and a drag hole is also cut for pulling as well as for dragging. For levering, local people generally prefer their wooden levers (long straight poles with thin ends usually made out of a very hard and heavy wood) but a levering instrument called 'Peevi' is also used here. It is a simple machine constructed on the principle of the "lever" and the log is placed between the power and fulcrum. When the log is ready for transport it is brought to the drag-path by coolies. A stout rope is passed through the drag hole and men on both sides hold the two ends and pull Three or four men with levers stand on both sides of the log to lever underneath when the caution is given. One man acts as the leader and sounds the warning song as "Ya lele!" and this is immediately replied by the rest in chorus as "Ye liah!" and a conjoint pull by the hands moves the log along. While dragging, round wooden billets are also thrown in front along the route to reduce friction and to serve as rollers

Dragging by Buffaloes. (Drag Path).

When the log is brought to the drag-path it is yoked to buffaloes. Two buffaloes can easily drag 40 cubic feet of any timber except Hopea parviflora and Mesua ferrea The drag paths are constructed along the ridges and contours. In the former case they are wholly in cutting while in the latter they are two third in cutting and one third in banking, with a ruling gradient of one in ten They are 8 feet wide with skidders placed 5 feet apart and about 4 inches in diameter. The skidders are half buried in the ground, and additionally strengthened by means of wooden spikes driven deep in the ground to hold them firmly in their portions. Xylia has mostly been used for skidders as it is a very strong and durable wood.

Slides.

The slides are constructed by artificially shaping a natural dry nullah or by cutting entirely an artificial depression to a trapezoidal shape. The earth thus obtained is used in reinforcing the two sides which not only guide the log but prevent it from slipping off the path. Gradient adopted is 1 in 3 Breaks are provided at intervals specially along bends or where the gradient changes, to check the velocity. Skidders are also placed cross wise as in drag paths but if the ground is too soft to withstand the wear and tear for a long time it is floored with planks of Dichopsis elliptica placed longitudinally, and joined by halving, to reduce friction.

There are in all three slides and three drag paths each dragpath alternating with a slide. At the start we have a drag path 2250 feet long. This is the 1st and longest drag path. Two pair of buffaloes are made to work here. This is followed by a slide 1743 feet long. This is the longest slide and the momentum created here is so great that one of the two logs placed as breaks was kicked to the other side by a sliding log with the result that the iron bar at the top has been bent. Water carried from a strean far above is made to trickle down this slide to keep the ground slippery. This slide has two bends. The second drag path is 660 feet long; one pair of buffaloes is placed here to drag the logs to the second slide which is only 223 feet long. The third drag path is 699 long and is followed by the last, the steepest and worst slide which is 870 feet long. It is in fact in two sections, the top section is not very steep and its bed is therefore planked as the logs frequently get stuck here owing to the soil being very soft. The bottom section is very steep and a break is therefore provided at its top end and a level platform at the bottom end to check the logs. At the bottom a check wall has also been constructed at right angles to the directiou of slide and immediately below the platform to hold up logs if they are not stopped by the platform.

Stacking at the Forest Depot.

As soon as the log reaches the bottom of the slide it is dragged by men by ropes, and stackd in its proper place. Stacking is done by placing one log crosswise and the rest placed across it with the butt ends foremost This method of stacking facilitates loading on to carts. Each species is kept separate. Since September 1920, about 35,000 cubic feet of timber has been reserved at the depot, and about a similar amount is lying at the forest awaiting transport.

Carting.

From the forest depot at the foot of the hills a pucca road has been constructed to Olavakkot Railway Station to a length of 5 miles at a cost of over Rs. 50,000. The logs will be carted to Olavakkot when a site has been acquired close to the Railway yard for a depot. A siding to this depot will be constructed and timber will be loaded on trucks.

The department is negotiating an agreement to deliver the timber at Olavakkot to the Kolar Gold mines. It has been estimated that the cost of extraction including felling, logging, dragging, sliding and carting will come to about 10 annas a cubic foot.

The following species of timber are extracted here. The general use to which their timer is put and other utilization products are also given :—

Name.	Description.
Mesua ferrea	A very good timber tree but very hard and cross-grained; consequently very difficult to work; exudes a resin, along the annual rings
Hemicyclia elata	A very elastic and strong wood; used for buildings.
Dichopsis elliptica	Elastic but hard and cross grained wood. We saw it used for planking the slides and bridges along the bridle path.
Calophyllum tomentosum	Wood tough used for masts and spars, yields 'poon spar' of commerce A lamp oil is obtained from the kernel of the fruit.
Canarium strictum	Wood is white when freshly cut, turns grey on exposure. It exudes the 'black dammer' of commerce.
Cinnamomum Zeyanicum	Its bark yields the 'Cinnamon' of commerce.
Garcinia spp	Yield 'Gamboge' of commerce chiefly from 'Garcinia-Morella'.
Arotocarpus hirsuta	Wood durable, not attacked by white ants, straight grained, seasons well and takes a fine polish. Used for dug-outs.
Artocarpus integrifolia	Wood is bright yellow in colour, lighter than *A hirsuta*. Easily worked and takes a good polish, largely used for furniture. The fruit is called Jack and is eaten by the local people.

Name	Description.
Dysoxylum malabaricum	White Cedar; wood yellowish white; scented. Not suitable for building purposes as it warps; very good for oil casks.
Cullenia spp	The wood is fairly good but not very durable; hence not much in demand locally,
Myristica spp	The wood of Myristica spp. is rather perishable and therefore not very much used; Common 'Nutmeg'.
Diospyros spp.	Yield very fine timber much used for furniture and cabinet work.
Dalbergia latifolia	A valuable timber tree commonly called Rose wood on account the colour of its heart wood. Used for various purposes specially where strength and durability are required but generally its use is confined to cabinet work and furniture.
Hydnocarpus Wightiana	Seeds yield an oil used for burning and for rheumatism
Hydnocarpus Alpina	Wood used for rafters and fuel.
Hopea parviflora	A good timber tree. As good as teak in its durability not well represented here.
Stromboria Ceylonica	Bark looks like Anogeissus latifolia; yields fairly good timber.
Holigarna Arnottiana	Bark when cut yields black acrid juice; not a very good timber.

Name.	Description.
Pterospermum rubiginosum.	Yields very good timber.
Acrocarpus fraximifolius	„
Engenia Gardneri	Bark white with knots and burrs. Timber not good

K R. Moorjani.

The man-eater of the Nallamalais, Cuddapah District.

The following account of the exploits of a man eating tiger which were cut short by its tragic death during December 1919, though rather belated, will, I hope, afford interesting reading, to the readers of this Magazine.

Some time during the year 1915, a tiger fairly full grown appeared at dusk within the precincts of a hamlet called Nallapparedipalli in Vonipenta Range, North Cuddapah Division. This hamlet is situated close to the Reserve boundary line and enclosed on three sides by the outlying spurs of the Nallamalais. The tiger apparently had come to snatch away one of the bulls. Hearing its growl, one of the two men who were near a cattle shed at this time, was foolish enough to go forward and drive the animal with a stick. The animal, mistaking the man by his dark complexion for a cow or a bull pounced upon him and carried him off The howlings of the victim roused the whole village but none of them had the courage to go after the tiger and rescue the unfortunate fellow. This was the first occasion on which the tiger tasted human flesh and since then it turned into a Man-eater. This incident created a stir in the village. For a few months the tiger was not heard of, but later on from Varikunta, a village in Badvel Taluk on the north-eastern side of the Nallamalais, report was received to the effect that the village cattle returned from the forest without the grazier. It was presumed that the man was carried off by the tiger. The loss of the grazier was followed in quick succession by the death of another grazier in a neighbouring hamlet. Along the Nallamalais on its eastern side and lying parallel to it for a distance of 30 miles there are a number of villages the cattle of which go to the forest for grazing. In addition to the local cattle, cattle from the Nellore District also come in large numbers during the season from September to January. The disappearance of the two graziers in so short a time created not a little fear in the minds of the simple folk who are naturally superstititous and credulous to a high degree. Rumours were afloat that a devil had appeared in the cloak of a tiger to snatch away men. Old men began to mutter prayers and count their beads. Old women took vows to sacrifice a goat to 'Mallama,' the Goddess of the forest to propitiate her for driving away the devil. The effect of these rumours on the general working of the Nallamalai forests also began to be felt. Road works, coupe works, and fire protection operations suffered a good deal. The Collector at this time was approached by the District Forest Officer on behalf of the Department and the Revenue Divisional Officer on behalf of the ryots, to issue a proclamation granting a reward for shooting the tiger. Accordingly in 1916, a reward of Rs. 100 was announced in the local gazette and also by beat of tom tom. In spite of this alluring prospect few men attempted to shoot the animal because once seen it sneaks away to another place rapidly. It will be interesting to note the haunts of this animal. Usually after appearing on the eastern side of the Nallamalais in Badvel Taluk opposite the said Verikunta village, the animal goes westwards along the path leading to the famous 'Ahobilam' temple in Kurnul District. After spending some time in the Kurnul forests it proceeds towards west till it reaches the forest opposite to the Vangli village — a place notorious for its forest thieves, which lies on the border between Kurnul and Cuddapah. From here it proceeds due south along the western end of the Nallamalais till it reaches Nulapuram village in Proddatur Taluk. Thence proceeding towards east it appears opposite to the, above said Nallappareddipalli hamlet. Here it watches people coming along the main road to the interior of the Nallamalais where many of the improvement coupes are under working. From here it passes along towards east, crossing the main Central ridge to Badvel Taluk and thence due north along the foot of the hill to the said Varikunta village.

In the year 1916 another man in Nallappareddipalli was snatched away and this incident led to the abandonment of the whole village. It must be reckoned here that this village contributed the chief source of labour supply to the Improvement coupes; and by this abandonment, coupe works suffered much. After this adventure the animal appeared again near Varikunta and carried off two graziers.

In 1917 Mr. Pitt, the District Superintendent of Police attempted to shoot the animal near Chinnalettipati Bhavi about 5 miles north of the Nallappareddipalli hamlet. But unluckily he missed it and the animal got a hit in the right fore-leg. Probably it may be due to this, that it was talked of, that the pug-mark of the animal showed one of the toes of the right fore-leg to be abnormally long and by which it was readily distinguished from the other marks. In the same year working of one of the Improvement Coupes in the interior had to be discontinued. The animal was so wary and cunning that whenever it got a victim in a place it returned to the same place only after several months had elapsed.

In 1918 about December it appeared near Nilapuram and caught hold of a Vangli fellow who was in the act of cutting down a red sander tree.

In January 1919 it came again near Varikunta and snatched away two graziers within the course of a month. Not only does this animal carry off graziers, but it pounces upon grass-cutters also. Generally in Cuddapah district, we find large numbers of men and women going to the forest to collect grass for feeding the plough bulls, and as a rule, they march in Indian file along foot paths. The animal will quietly follow and carry away the last man in the file. It is only when they reach the destination that the last man would be found missing. This had also happened to the pilgrims who go to the 'Ahobilam festival'. By this time report was received that one of the graziers who was killed near Varikunta was the same individual who abetted the offence of setting fire to the forest by giving a boy a match stick. The man thus paid the penalty by the loss of his life as well as the fine he had to pay in the Court. The havoc played by this animal brought grazing practically to a stand still, and none dared to approach the forest at all. Protection of the forest was however assured. There were no illicit fellings and there were a less number of fires. The beast, of course deserves the thanks of the department though at the expense of human life. The animal was not heard of again till September 1919. During the latter part of August 1919, I had to camp in the Nallamalais opposite to Varikunta. I reached the village one evening intending to proceed the next day to the interior where there is a forest Rest House, about 6 miles away. The villagers refused at first to give me carts for the transport of my samans. It was only through persuation and threat that I was able to secure one cart the next morning. The servants and the subordinates were quaking in their shoes when they heard the prospect of going to the forest camping; however, in the afternoon with my rifle loaded and having lead the party in front I reached the camp before dark. The Village Magistrate who had to appear the next day before me on some forest matters came with a big retinue armed with spears and, beating a drum all the way. However nothing was heard about the animal till I left that camp. But just a fortnight before the Conservator Mr. Jackson and myself started from Cuddapah towards the Nallamalais for inspection in October 1919 we heard that the animal had appeared again near Nilapuram and seized a grass cutter at about 4 o'clock in the evening when the party was returning from the forest. The man was rescued by the others, but died on the way. We proceeded and halted outside the Nallamalais at a place called Kothapalle. While camping here we got information that the animal came one morning near the Balappa Bhavi bungalow situated on the border of Cuddapah District at about 11 A. M. The forest watcher who was then alone, was scraping the grass in front of the bungalow with a turban on his head. He was sitting on the ground facing the bungalow when the beast quietly came from behind and took off the turban by its mouth and walked away. Feeling that his turban had been removed by somebody, the watcher, turned aside, and finding it was the tiger which had lifted the turban, cried out and ran inside the bungalow and fell down unconscious. Half an hour afterwards the coolies who were working on the road, two hundred yards away returned and found the watcher laid up with fright. This story, will of course, be construed as strange and false but the incident really happened. Mr. Jackson, intending to shoot the animal, purchased two buffalo calves and we marched on to Balappa Bhavi, bungalow the very next day and camped there. On arrival we saw the pug-marks of the animal, which clearly proves the watcher's story. The buffalo calves were tied in two or three places but they were not killed, A couple of days afterwards we got information that the animal had crossed the Central ridge, appeared opposite to a village on the Badvel side and carried off a girl eighteen years old. It happened that a party of about half a dozen men and two women one of whom was this girl and the other an elderly lady were going to the forest in the morning for collecting grass. They were marching in Indian file, the men preceding and the women coming behind. A mile from the Reserve boundary line the men had gone on a little in advance and the girl was loitering behind and the stepped aside into a nullah about 10 yards below the path when the animal, which probably had been following them or lying in wait pounced upon her and carried her off. The elderly woman saw this and cried out Hearing the cry the men ran back but were afraid to follow the beast and saw to their horror the girl being dragged along, leaving a pool of blood behind, with her clothes torn to shreds. We had arranged to proceed to the Jothi bungalow opposite to the Varikunta village, after leaving Balappa Bhavi, via. Porumamila, thereby making a round-about journey of 30 miles, but now we made up our minds to follow the animal, and sent the samans in advance along this way and proceeded with our light kit through the heart of the Nallamalais crossing the main central ridge. We arrived at the Jothi bungalow at about 11 o'clock in the morning when to our surprise we heard that the animal had appeared near Varikunta and killed a calf the previous night and that the calf had not been fully eaten. We arranged to have a beat the next day. Jothi bungalow is at the head of Jothi valley overlooking the Varikunta village. This valley is about 6 miles long and about 100 yards wide at its narrowest end. There are two paths leading from the village to the bungalow and generally the beast walks along one of these paths, and along which also, cattle usually go and return. The forest here is very dense, with thick growth of weeds and grass. We started at 6 A. M and proceeded to the middle of the valley, where Mr. Jackson, took up his position on one path, while I sat on a machan on the other. Beating commenced from the line at 6-30

A. M. but though we stayed till 1 P. M. the animal escaped us and we did not see any trace of it. We returned to camp in regret. The next day we marched from Jothi towards the north ; at the 6th mile there is a forest rest house. This place is called Thadukku. Here on arrival we were astonished to hear that the animal which had escaped us the previous day had come and killed another calf and mauled two cows. About 50 cattle consisting of milch cows and calves were penned in an open space a couple of furlongs away from the rest house, It was into the middle of this herd that the animal had jumped and killed the calf The herd, was sent away immediately and a Machan was erected on a Yeppi (Hardwickia binata) tree growing close by ,Mr. Jackson sat for the tiger from 4 o'clock in tree evening till half past 8 at night but the animal did not turn up. In the small hours of the next morning there was a downpour and the ground became very wet. It the morning on going to the machan we found the carcase had been dragged away by the beast On account of the rain and the cattle trampling over the grass the previous day we had considerable difficulty in following the spoor. At last after a walk of over a mile and a half we tracked the carcase to a nullah where it was found underneath dense evergrown growth, carefully hidden by the animal, which had eaten about a third of it. Mr. Jackson sat on a tree nearby and awaited its arrival till 7 P. M. But it did not come. Like the previous night there was again rain and the next morning it was found that the animal had dragged the carcase still further. We found that it was futile to go any further and therefore abandoned the chase.

The beast however had not been killed and the villagers were in dreadful plight. Local Shikaris were persuaded to try and shoot the animal, and the villagers were induced not to take away the human corpse immediately when a man was killed as it was hoped that in this case the animal would return to eat and would afford an opportunity for shooting it. Free licences to shoot the animal were given by the Collector but few dared to come forward. At last, as a last resource, I suggested that the animal should be poisoned. While I was camping in the Veligondas during December 1919 I heard that the beast had killed a grazier near Varikunta. An old man of the village assisted by two other brave fellows went quietly to the corpse and put mercurial poison in the thigh and the back after making deep incisions. The animal returned to feed and ate the corpse and as a result died; but the men who poisoned it had not the courage to follow it up. It was only when the beast was in an advanced stage of putrifaction that they discovered that it was dead. Then they took the animal and tied it to a tree and fired a bullet through its stomach, intending thereby to show that they had shot it. The Range Officer came to know of this and went to inspect but on arriving at the spot, found that the carcase of the beast had already been buried and that the local chucklers had skinned it very badly. The skin was unfit for use of any sort.

Thus ended the depradations of the man-eating tiger- In all, the animal had killed about 17 men and 5 women in Cuddapah District alone. It may have killed many more in Kurnul District, but of this we have no information.

M. R. SUNDRAM AYYAR.

On the wealth of the forest and its exploitation.

A lecture delivered at the Madras Exhibition (in December 1915)
by Ray Bourne, Esq., I. F. S.

"The wealth of the forest and its exploitation" deals with forest utilization and was selected as the title of this lecture not only because it is that branch of the science of forestry with which the forest section of this Exhibition is connected, but also on account of its very wide scope.

Forest utilization raises many questions of forest policy, forest engineering and forest economy proper; but their connection is so intimate, that I think it would be more generally interesting, if I approach the subject generally and in its entirety.

I propose to sketch with reference to the forests of India the progress made towards their utilization in the past, the stage at which we have now arrived and the prospects, which the ever-growing world's market of forest products holds out to us, laying special emphasis on the necessity of enterprise on the part of the community to supplement the efforts of the Forest Department. Forests confer both direct and indirect benefits, in the former case by their products, in the latter by their influence upon climate and by the manner in which they regulate rainfall and water-supply and serve to protect the soil. The produce of forests is classed as major products, timber and fuel, and minor products, the balance; a term which comprises a great variety of articles, such as tanning materials, dye-stuffs, medicines, gums, leaves, flowers, fruits, seeds, fibres, grass, bamboos, canes, lac, honey, wax, horns and many others. Thus forests represent a large amount of capital, afford numerous opportunities for the lucrative investment of capital and absorb an enormous amount of labour.

Almost the first attempt at the conservation of these resources was made by the Government of Madras In 1842 Mr. Conolly, then Collector of Malabar, strongly advocated the protection of the teak forests in Malabar and the Anamalais and in the interest of the future started a plantation now known as the Nilambur teak plantations.

From this year dates the commencement of the conservation of the forest of India. In 1864 the present Imperial Forest Service was inaugurated and organized. The first duty of the new department was to ascertain the extent of the remaining forests. India is a country of extremes of climate and rainfall; where rainfall and temperature are favourable, the reproductive power of the forests is great, and *vice versa*. During the continued struggle between human activities and efforts at self-preservation on the part of the forests, the latter succumbed wherever the climatic conditions were unfavourable; hence what remained when the department was started, was situated in localities with a heavy rainfall, or where a scanty population had left the forest mostly to themselves. The main areas of forest in the Madras Presidency, therefore, are found firstly along the foot of hills and on the ghats of the West Coast from South Canara to Tinnevelly and secondly in the hilly tracts further east, such as the Mysore plateau the Palnis, the Shevaroys, the Javadis, the Nallamalais and other hills.

Settlement has extended the area of forests to be exploited under the management of the State. The settlement of the bulk of the forest area now under the protection of the State was completed by the end of 1903—1904, the area of such forest having only increased by 5½ per cent in the last ten years. From 1904—1905 dates very marked progress in opening up the country with roads and buildings, many of the recent roads being aligned not only for purposes of communication but for the definite exploitation of forest produce.

The statistics of progress for five-year periods from 1894 to date, of expenditure on communications and buildings in Indian State forests, are interesting, the average annual expenditure for the last five years being three times that for the five years 1899—1900 to 1903—1904.

Turning now to the systematized extraction of forest products, principally timber, fuel and bamboos, the aim of working-plans is to find out the capital value of the existing growth, to introduce measures for improving the capital value and last and not least, to avoid encroachment on capital, or in other words, to determine the annual and periodical production or interest and so to regulate extraction that only the annual or periodical increment is removed.

The working-plans now in existence in India are to a considerable extent only preliminary schemes, which must from time to time be elaborated as information is available. Steady progress has been shown. For every five year period from 1889 to 1909 about 10,000 square miles were completed, while from 1909 to 1914 the area was only 5,800 square miles. This falling off during the last five years is by no means an indication that the work is nearing completion, but rather that in some provinces the importance of working-plans has been recently rather lost sight of. Against 53,926 square miles completed in 1913—14, there are still some 32,500 square miles of exploitable forests, for which working-plans are urgently required. The progress in some provinces has been less than in others, and more unsatisfactory than the statistics of forest area under working-plans would lead one to think.

In the Madras Presidency out of a total area of 17,816 square miles for which working-plans are urgently required, by the end of 1913—14, working-plans for 11,568 square miles had been compiled. But a large proportion of this area is not worked at all. Many working-plans set aside large areas as unworkable, as a reserve or for a treatment of rest from working. For example in the Western circle, comprised of districts mostly of the Western Ghats, containing a large percentage of timber-producing forests, out of a total area of reserved forests of 3,820 sqare miles, 1,704 square miles are under working-plans, but detailed working of timber, fuel and bamboos is prescribed for only 867 square miles. Further, there are only a few working-plans for forests in this Presidency, which have really attempted to determine the capitalized value of the forest growth, and that only in respect of one or more of the principal products

This is almost solely due to an insufficient staff to cope with the work of completing the opening up of forest areas to carry on the work of protection, to maintain the present rate of extraction and yet at the same time to augment the rate and intensity of exploitation An increased establishment means an increased expenditure. Yet the initial expenditure required for working-plans is expenditure that would yield the surest and most rapid return. To state a simple analogy: the prospector with a knowledge of the possibly great mineral-wealth of a particular locality takes his knowledge to a financier. If such knowladge seems sufficiently definite, the latter may promote a company to or himself finance a trusted mining expert to report and estimate the extent of the supply and the possible annual output Such a deputation may be costly, but the better the man sent, the greater weight will his opinion and report have in the floating of a company. But is not such initial expenditure most often amply and most rapidly repaid? So it is with working-plans.

The progress described above, in settlement, construction of ways of transport and preparation of working-plans has led to ever-increasing exploitation of the well-known timbers and minor products of the forests of India, which can be demonstrated by some amazing statistics. Between the five year periods 1864—69 and 1884—89 the annual gross revenue no less than trebled from 37½ lakhs to 116¾ lakhs. The expenditure also trebled and therefore the percentage of surplus to gross revenue of 36½ per cent remained the same.

Between the five-year periods 1884—89 and 1909—14 the gross revenue increased by 153 percent, the expenditure by 134 per cent and the percentage of surplus to gross revenue from $36\frac{1}{2}$ per cent to $44\frac{3}{4}$ per cent. In all business enterprises the interest realized on the invested capital depends to a great extent on the relation between the expenditure involved and revenue realized No business with an insufficient capital behind it can ever pay a proper interest, while on the other hand the over-capitalized concern must always pay a low rate of interest or even fail to pay any at all.

The working of the forests of India is a semi-commercial concern, in the management of which the same principles apply. The growing stock or the actual growth in the forests represent an enormous capital and we may call it the natural capital in contradistinction to the money capital, which in other words is the annual expenditure sanctioned by Government. In the present state of Indian forestry it is impossible even to approximately estimate the present capitalized value of the growing stock; we have available only statistics of annual expenditure and revenue. How is the financial position of this concern to be judged? The statistics of revenue and expenditure given above show that increased expenditure in the past has been followed by increased revenue and revenue increased sufficiently at first to maintain the percentage of surplus to gross revenue and latterly to augument it.

Economically a business concern should be managed so as to rapidly raise its percentage of surplus to revenue to the highest degree and if ever reached to maintain it at that degree indefinitely.

Further increase of annual expenditure on establishment, means of communication and transport and so exploitation of the forests, *up to a certain point*, will without doubt show a corresponding increase in revenue but the question is, how can the percentage of surplus to gross revenue be most rapidly and yet lastingly increased ?

Can the increase of percentage of annual surplus to gross revenue from 36½ per cent in 1884—89 and previous years to 44¾ per cent in 1909—14 be materially augmented in the near future and how ? No forest officer or other, who has studied the subject, will disagree with me, I think, if I state that hardly any forest in India is intensively worked to its fullest degree as intensive working is practised on the continent of Europe This, by no means, means that in a particular forest the capital represented by any particular product such as teak, for instance, has not in the past and is not even now being often depleted, but rather that the exploitation of the annual interest on the gross capitalized value of all the known and possible products of the forest, is at present only partly attempted. The annual wastage in forest exploitation cannot as yet even be approximately estimated This does not mean merely wastage in conversion and collection, but the failure to exploit the annual increment or production, It is said that Messrs. Colmans have made their fortune not on the mustard which people eat, but on the mustard which they take and leave on their plates. The wastage in forestry in India may not be on the same scale, yet it must be something prodigious. That point up to which increased expenditure will show an increased percentage of surplus to gross revenue cannot be reached until every acre of forest is being intensively worked and yielding the highest possible interest.

We have already considered the extreme importance of working-plans, as the means by which the capitalized value of the growing stock and the annual increment to be exploited, is arrived at. Up to a certain point, which must be chiefly determined by the state of the market and the demand, the extension of working-plans must, as they come into force, raise the percentage of surplus to gross revenue. But when that point is reached new sources of demand have to be found if the percentage is still to be raised. Are we to wait until that point has been reached? The question of demand is governed by several factors, which vary in importance in several localities. First and foremost a demand in any particular locality is useless unless the produce sought after can be brought to the scene of demand with at least a small margain of profit. For every locality and for every kind of produce in demand there must be a limit of distance to which the produce can be extracted. This is a great source of waste and the development of forest engineering, especially in the case of improved means of extraction and the introduction of slides, tramways, aerial wire rope ways, etc., must greatly reduce waste by widening the possible limit of extraction of each product. Secondly, demand except for the most valuable products is dependent on local industries. I pointed out before that most of the working-plans in this Presidency only prescribe the extraction of one or more of the most important products. Further they, many of them, prescribe a treatment of the forest, the aim of which is eventually to establish in such and such a forest a growing stock for the most part only of the at-present-most-valuable products. More especially in the case of timber forests, they aim at killing out, as soon as possible, with of course the hope of replacing them with the more valuable species, all those species which are at present locally unsaleable at a profit, even within a very short limit of radius. This is wastage of a high degree. Why cannot they be sold at a profit? Because there is no demand in the neighbourhood for timber other than timber suitable for construction and agricultural implements. Yet many of such miscellaneous or "jungle woods," as they are often called, are eminently suitable for certain purposes. Unfortunately this is not sufficiently well known, nor has the extent of supply and cost of extraction been investigated in more than a few localities The information now available has for the most part only recently been recorded Ever since the inauguration of the Forest Department new discoveries relating to every branch of the science of forestry, as applicable to the forests of India, have been constantly made. but few details were ever recorded. It is only to the energies and foresight of such men as Mr. Gamble, who specialised on the properties of Indian timbers, and to recent research that we owe all the information available. It was only in 1906 that the Imperial Forest Research Institute at Dehra Dun was formed with six officers one in charge of the research investigation of each of the main branches of forestry. They were subsequently reduced to five.

Forest research aims at the systematic investigation of all the economic and scientific problems connected with Indian Forestry. The economic branch of forest research, with which we are now particularly concerned, is without any question the more rapidly remunerative of the two. The scope of this branch is of almost incalculable extent and of the highest pecuniary value. Much has recently been done, but the Imperial Economist has had to contend not only with the scientific investigations of the properties of and possible commercial value of forest produce, entailing numerous physical and chemical tests, in which latter he is assisted by the Forest Chemist, with the resultant tabulation of statistics but at the same time has had to investigate the sources and possible extent of supply throughout India and Burma. Progress in the former work, although already extensive, is, as yet, only in its infancy, while on the latter investigations have had to be confined to a few problems of the widest scope.

It would seem to be the fairest division of labour if the investigation as to the sources and possible extent of supply of each product, the cost of extraction and the possibility of reducing it by the introduction of improved and advanced methods of transport and finally the prospect of the creation of profitable new industries for the utilization of such products, were to be undertaken by the several provinces.

The results of recent forest research work whether actually carried out in India or in other parts of the world have gone a long way to reveal to us the enormous wealth of the Forests of India and how impossible it is at present even approximately to estimate their capitalized value. I have already mentioned the word "wastage" and defined it as applicable in two directions with regard to forest utilization. Research in the direct economical questions of Forestry has to consider both.

Wastage by collection, in the case of the larger produce such as timber and bamboos, is intricately bound up with the question of improved methods, of transport, but in the case of minor produce is perhaps for the greater part due to the employment of faulty methods of collection. For instance, consider the collection of gums or resins mostly obtained by tapping or mutilating the stem of the tree in some way. Faulty methods may impair the yield, and often as not they may even kill the tree. Closely connected with wastage in collection is wastage by conversion. Wastage by conversion is chiefly confined to the conversion of timber from the natural state to that stage in which it is required by any particular industry. From the very felling of the tree in some cases this wastage starts. The barks of many timber and fuel trees are of considerable value for the extraction of dye and tan extracts or for fibre, yet rarely is any attempt made in timber and fuel coupes to extract them as a separate commodity of sale.

Again in the felling of timber trees in any large quantity, a large volume of branch wood is absolutely wasted. There may be no demand in the immediate neighbourhood for fuel or it may not be a first-class wood for fuel, yet the bye-products to be obtained by destructive distillation in small portable distilleries, might often be sold at a considerable profit. In the Nilambur teak plantations, from which in the last two or three years at least 80,000 cubic feet of teak timber has been annually extracted and which amount will be constantly on the increase, practically the whole of the branch wood has gone to waste Teak is not a first-class fire-wood. Statistics are in course of collection, but a very rough estimate shows that if portable distilleries were introduced, the annual net revenue might at present be increased by some Rs. 7,000. It sounds a small amount, but it is only one item out of many.

Again there is a considerable wastage at the saw-mill. Large quantities of timber are annually subjected to the saw in some form or other, through which a large amount of sawdust is made available. It is not absolutely wasted for it is generally used for packing or even for fuel, but cannot it be turned to greater profit. An extract published in the *Indian Forester* for last January describes a method of treating sawdust whereby it can be partially converted into a soluble and useful substance, called sacchulose, useful both from the point of the distiller and of the agriculturist, as a foodstuff for fattening live-stock.

Again is there not a great waste in the use of the more valuable and fancy timbers, such as are used for furniture and cabinet work? I refer to the question of utilizing them to a greater extent as veneers. The average proportion of veneer to planking 1 inch thick is as five is to one. The market price of such valuable and handsome woods is rapidly rising and there surely seems a great prospect for enterprise in the extension of production of such veneers in India It would result in a considerable reduction in waste.

Turning from the question of wastage in conversion and collection to the wastage from failure to exploit the annual increment or production, we have already considered the question of its reduction by development in the branches of forest working-plans and forest engineering but we have still to consider in detail some of the possible financial results of developement in economic research. I can only attempt to give a few examples and will separate them into three heads; the question of timber and its uses, bamboo and its uses and other minor produce. The uses and properties of the more valuable timber, such as ebony, teak, rosewood, sal, sandalwood, redsanders, *Pterocarpus marsupium, Hopea parviflora, Xylia dolabriformis, Benteak* and *Terminalia tomentosa* are already well known, but there are at least 125 trees indigenous in this Presidency suitable as timber for some purpose or other. A number of them are, in the vicinity of the forest, locally employed in cheap house construction and to meet the immediate necessity of the agricultural population. But only a very small proportion of the annual increment or possible yield is so utilized. The balance is to a very large extent simply going to waste. There are such timbers as *Terminalia paniculata, Gluta travancorica, Hardwickia pinnata, Hardwickia binata, Adina cordifolia, Dichopsis eliptica, Carallia integerrima, Dipterocarpus indicus, Anogeissus latifolia, Albizzia Lebbek, Albizzia odoratissima, Chikrassia tabularis, Chloroxylon swietenia, Gmelina arborea* and many others. The reduction of such wastage depends on the creation of new industries. It is on the development of agriculture and of new industries that the welfare and prosperity of the rural population of a country depend. It is to ascertain the most striking and most profitable developments of the natural resources of the forests in the latter direction that economic research in the last few years at Dehra Dun has been further directed.

Extensive investigations and experiments have been carried out as to the suitability of various woods for the manufacture of matches.

It has been estimated that, for each minute of time, the civilized nations of the world strike no less than three million matches on the average.

From 1903—1904 to 1913—1914 the annual value of imports of matches into India has risen from Rs. 50,61,000 to Rs 93,75,000. The consumption of matches in India in 1913—14 amounted to about 16,000,000 gross of filled boxes of which hardly 1,000,000 gross were manufactured in the country. Until recent years matches "made in Norway or Sweden" or "made in Austria" monopolised the Indian market. The Japanese however have entered this field of industry and with their cheaper though inferior matches, have captured nearly half the market, having exported to India in 1913—14 on less than 7¼ million gross of filled boxes. The complete record of the investigations made by the Forest Economist has been published in a memoir by R. S Troup I.F S, in 1910, and a perusal of this very interesting work is invited. He shows that to monopolise the market and to meet future requirements, at least 70 and probably more large factories with a daily outturn of 700 gross of filled boxes per diem, could be maintained in India He shows that, being free from import duty and considering the shorter lead, if an Indian factory can produce good matches made of white wood at an average selling price of slightly less than 14 annas per gross, it should secure the market. Of the many woods determined as eminently suitable for the match industry eight occur in large quantities in the forests of the Western Ghats close to the sea board and railway and very well served by floatable rivers. To supply one match factory with an output of 700 gross of filled boxes per day some 67 to 68,000 cubic feet of suitable wood would be annually required.

It remains for local investigation to show how many localities there are on the West Coast, capable of annually supplying this amount, and maintaining the supply indefinitely, and to ascertain the cost of extraction.

Other investigations of the Forest Economist as to the suitability of many of the soft woods of India, mostly unsuitable for construction purposes and therefore at present little extracted, for use in the construction of tea boxes, cigar boxes and packing cases are of particular interest There seems to be a particularly favourable prospect for enterprise in this industry. A very large amount of soft woods is annually imported into India for tea and coffee boxes and for packing cases, yet there are eminently serviceable woods available in considerable quantities in this country Again the most favourable conditions are to be found on the West Coast where woods suitable for each purpose are available in considerable quantities. Again it is for local investigation to show to what extent and at what rate a continuous supply could be made.

As to the pencil-making industry, no separate statistics can be given of the imports into India of pencils, as they are included under the head of "stationery other than paper." The imports under this head from Germany and Austria in 1913–14 of which the most important is pencils amounted to Rs. 11,85,000. The prospect of this industry depends on the presence of large deposits of amorphous graphite of a suitable quality and of a sufficient supply of suitable soft woods. Of the former there is unfortunately a dearth in India but of the latter there is undoubtedly a sufficient quantity The Director of Industries has recently been investigating the matter and I understand that certainly five soft woods have been found most suitable

The use of bamboo for housebuilding, mats, basket-work, fans and such articles is nowhere better known than in India, but the discovery of its suitability for paper-pulp has within recent years infinitely increased the scope for its exploitation. The past history, the present state and future prospects of the world's supply of paper-pulp is one of the most absorbing questions of forestry. It was Gladstone who said: "The consumption of paper is the measure of a people's culture." We have heard lately a lot about this word "culture" and may perhaps be pardoned if we now hesitate to accept the universal application of such a statement At any rate the increasing rate of consumption of paper within the last half century is almost incredible. The paper of the ancient Egyptians was made from the stems of a sedge which grew on the banks of the Upper Nile. Up till 1861 the various kinds of paper used throughout the modern world were made from rags. At this date the suitability of esparto grass was discovered, but the increasing demand for papermaking material soon exceeded the supply of both rags and esparto and the manufacturers turned to wood-pulp. Wood-pulp brought the cost of ordinary newspaper down from 5 pence per pound in 1870 to a penny farthing in 1900. Whereas in 1870 the world's annual production of paper was about 2,000,000 tons, it is now considerably over 8,000,000 of which over 6½ millions are produced from wood-pulp. This demand has depleted the capital wealth of many of the great forest countries of the northern hemisphere and particularly in the most accessible localities. The necessity for the conservation of forest capital has been realized too late and paper manufacturers in the United States and in Europe are faced by the prospect of a great famine To quote the remarks of Lord Northcliffe, the Chairman of the great Harmsworth group of publishing enterprises. "It is no secret that the whole world that lives by paper and print is clouded by the imminent approach of a rise in the price of paper I have just seen a list of newspapers in the United States that have been obliged to double their prices and another list of those that, instead of doubling their prices, have reduced their size. This rise in price of our raw material we know to be chiefly owing to the depletion of the world's supply of the spruce tree from which this class of timber is made. This augmentation in the price of paper is caused by the scarcity of a material that takes at least thirty years to grow, and is a much more serious from of famine than that where an article is concerned which can be grown in a year or two."

The potentialities of bamboo as the natural source of paper-pulp, a crop easily grown over great areas in this country, which takes only a few years to mature and which can then be so exploited, as not to impair its capital value. have been recognized for some time The whole question has been considered by the Forest Economist and by Mr Raitt, the paper-pulp expert to the Government of India, and their investigations have benn recorded. The bamboo seems to have a greater future before it than any other product of Indian forests.

The uses of other minor products have recently become fairly well known and their exploitation has correspondingly rapidly extended Yet the wastage, by failure to exploit the annual increment, must be something prodigious. Investigations as to the sources and extent of, the supply of the raw material from which so many commercial commodities are manufactured and on which so many indurstries depend, must be highly remunerative. To mention two branches of minor product alone, those of tanning and dye materials. The import of tanning extracts into the United Kingdom in 1914 amounted to Rs 1,38,39,000 The total export of tanning extracts from India to all countries in 1912—13 was under Rs. 65,00,000.

Vegetable dye materials. however, have to compete with mineral dyes, and being mostly inferior in fastness are rather at a disadvantage. There is, however, a great possibility of increased exploitation for the Indian market.

From these few examples the annual wastage of the wealth of our forests may be imagined.

The reduction of such wastage depends to a very large extent on public enterprise. To quote one example, with the details of which I happen to be cognisant. The published record of the Imperial Economist, as to some of the most promising localities in India for the installation of factories for the manufacture of paper-pulp from bamboas, attracted the attention of a famous Scotch firm, who were fully alive to the imminence of a great paper-pulp famine. They sent their representative to Madras and a detailed investigation immediately followed. It showed that from South Malabar, their demand of 20,000 tons of bamboos annually could easily be met. If other conditions are found favourable and a factory decided upon, a detailed working-plan will be compiled. Further this investigation has already resulted in the contemplation of an improved and therefore cheaper method of transport, by the improvement of floating facilities.

One object of this Exhibition is to give the public some idea of the natural wealth of this Presidency both by sea and land. The forests of India are the property of the nation the management of which the State is developing for the general welfare and prosperity of the people.

The forests are a revenue-paying property and the quicker they are developed, the greater will be the surplus available for expenditure on education, sanitation and such needs on meeting which the degree of civilization of all nations largely depends. From the general public we hear little else but an unending tale of grievances, many of them doubtless genuine. It is now, however, generally recognized that most of these grievances will disappear, given a forest department sufficiently supervised, and at the same time adequate in number and training, to manage, develop and exploit our forests in the interest of the people and in accordance with the policy of the State.

STATEMENTS.

No. 1.

Statistics for five-years periods of progress of expenditure on communications and buildings in Indian State forests.

For the quinquennium.	Average annual expenditure. Rs.
1894—1895 to 1898—1899	4,17,000
1899—1900 to 1903—1904	5,50,000
1903—1904 to 1908—1909	10,75,000
1909—1910 to 1913—1914	15,00,000

STATISTICS of progress in the compilation of working-plans for the State forests of India.

At the end of the year.	Area for which working plans were completed
	SQUARE MILES.
1888—1889	912
1893—1894	10,279
1898—1899	21,620
1903—1904	34,222
1908—1909	48,104
1913—1914	53,926

No. 3.

SOME statistics of gross revenue and expenditure for five-year periods, 1864—69, 1884—89 and 1909—14 for the State forests of India

Quinquennial period.	Average annual			
	Gross revenue.	Expenditure.	Surplus.	Percentage of surplus to gross revenue.
	Lakhs.	Lakhs.	Lakhs.	Per cent.
1864—1865 to 1868—1869 ...	37½	23¾	13¾	36½
1884—1885 to 1888—1889 ...	116¾	74¼	42½	36½
1908—1909 to 1913—1914 ...	296	163¾	132¼	44¾

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The Marathon race at Nedungayam; Run on 11-12-1920

This race is an annual event in which both the Divisions of the College take part. It is usual to hold it at the joint camp of the Division. This year, however, the tours of the Divisions were so arranged that no opportunity was given for a joint Camp The nearest approach to a Camp of that kind was when the Senior Division Students were camping at Nilambur, while the Juniors were close to them, at Nedungayam, during the first half of the month of December. The eleventh day of this month was fixed upon for the race As for the course, it was first proposed to take the juniors to Nilambur, and have the race there. But the Principal had come to stay with the juniors at Nedungayam only a day or two before the actual race day. It would also seem to have been the custom of the College till now, to finish the race either at or within easy reach of the Principal's Camp. Therefore, the idea of a Nilambur Course for the Marathon race (1920—21) was dropped, and Md. Abdul Karim Sahib Bahadur, Instructor of the Junior Dn was asked to select the Course at Nedungayam. The Senior Dn. had, therefore, to come to Nedungayam for the race and the juniors stood as hosts for most of them during their stay.

The start of the Course was on the Compartment line of 1897 Teak Plantation, just where it touches the Nedungayam metal road. This plantation is a big rectangle with three sides bounded by the compartment line and the fourth by the road referred to. As the result of a recent thinning in this compartment, many poles and branches were lying on the line. One elephant was at work for a whole day, to clear the path through this line for the runners We had to run round this plantation, touching the two interior corners, and then join the road again at the third corner. Hence, the course lay along the road to its end at Kanjeri kadavu, where we come to the new Pulimunda Road. This road takes us through a gently rising country of thick forest growth, to a Serambi on the top of a small hill in the interior. After reaching this Serambi, we had to return by this same road and reach the winning post on the metal road a furlong and a half in advance of the starting point. The actual length of the Course is not known, but it may be estimated at 7½ miles, approximately.

The start for the race was given by Mr. R. B Cornwell at 7-25 A. M. With the exception of four students [3 juniors and 1 senior] all others took part in the race The compartment line being very narrow, the start could not be fairly given or taken. At the first corner of the plantation, Mr. S V. Doraiswami Iyer, the Asstt. Ranger of Nedungayam, was posted to see that nobody made foul running in the turning. At the second corner, Havildar Kadir Batcha was stationed for the same purpose; while at the third Mr J. H Longrigg stood cheering up the runners. Mr. Abdul Karim was at the Serambi to issue return chits to the runners in the order of their appearance before him. The winning post was watched by our Principal, Mr. C. C. Wilson, who also recorded the time of the winners and some of the other runners as well Mrs. Wilson was also present there from the start, evincing a keen interest in the progress of the race. Mr. G. C Robinson, the Dt. Forest officer of South Malabar came there about the middle of the race and showed genuine interest in the events of the day.

But, the most interested of the officers was Mr. J. H. Longrigg, who wished the Junior Dn. to win the Marathon Cup, as they had won the Hockey challenge cup from the Senior Dn. The Juniors ran well, defeated the Seniors, (some of whom tried very hard), by a margin of nearly 30 points, and carried away the cup to the great satisfaction of the officer in charge of their Division. Even Zahurul haq who was expected to come last by all that were present there managed to leave one man of the Senior Dn. behind him.

The first place was taken by a Junior Student, N. S. Poonacha who broke all previous Marathon records in the college by finishing the course in 45 minutes. Three others who came after him were

I Ramamurthi	of the Senior Dn.	whose time was	49 min.
C. S. Ganapathi (Coorg)	do	do	51 min.
Manuel	do	do	53 minutes.

Senior Student S. Ramalingam came fifth in 54 minutes. The last man took 1 hr 34 minutes to finish the Course. In this connection a comparative statement of the time taken by the winners of Marathon Race during the last 5 years, given below, may be of interest;—

(1920—21)	N. S Poonacha	... 45 min.	Length of Course being approximately	7½ miles.
(1919—20)	M. B Subbiah	... 50 min. 30 Sec.	„	8 miles.
(1918—19)	V. Narayanasamier	... 51 min. 12 Sec.	„	6 miles, 5 fur. 100 ft.
(1917—18)	P. K. Parameswaram Pillay	54 min. 45 Sec	„	Do
(1916—17)	C S Nanjappa	... 52 min	„	Do
(1915—16)	Do	... 56 min. 15 Sec.	„	Do

After the race was over the Principal in a few words congratulated the winners and Mrs Wilson gave away the prizes. The first prize was a miniature Cup in Silver and it was won by Student Poonacha. The second, third and fourth men were also given nice prizes. The challenge cup was taken for the Junior Dn. by N. S. Poonacha, the winner of the race.

With three cheers to Mr. and Mrs. Wilson, this interesting annual event of the College came to a close

At this stage the Principal and Mrs. Wilson kindly invited the students to light refreshments and a cool drink of lime juice and all of us drank greedily and gratefully to their health.

P. SITHAPATHI AYYAR,

Junior Division.

Hockey Season.

(August September and October 1920.)

A list of matches played is given below :—

Serial No.	Date.	Opponents.	Result.
1	17—8—20	Agricultural College ...	Lost (2—4).
2	2—9—20	Central Recruit School ...	won (5—1).
3	10—9—20	S. I. R. team Podanur ...	won (9—0).
4	11—9—20	Reserve Police ...	won (9—1).
5	19—9—20	Do ...	lost (0—2).
6	30—9—20	Ooty Police ...	won (3—0).
7	1-10—20	S. I. R. team	won (2—0).
8	5-10—20	Stanes High School ...	lost (0—5).
9	16-10—20	Agricultural College ...	drawn (4—4).
		Tournament.	
10	26-10—20	Stanes High School ...	lost (1—3).

The interdivisional Hockey Match.

Seniors (1919—'21) *Vs.* *Juniors* (1920—'22)

This match was played in right earnest on the 30th October 1920 at 4-35 P. M. sharp. Messrs. R. B. Cornwell and C. C. Wilson, umpired. For the first 20 minutes the Seniors put up a good show and were pressing hard in the Juniors' Circle while the juniors had hardly any time to be on the offensive. Then light rain began to fall and at 4-55 P. M. the play had to be temporarily stopped on account of heavy rain.

Play was recommenced within 5 minutes and the day changed in favour of the juniors. Within 10 minutes' of recommencing, the juniors scored 2 goals. This score stood till the end of the first half which was whistled at 5-15 P. M.

After a rest of 5 minutes, play resumed at 5–20 P. M. still in favour of the juniors. Within 5 minutes the juniors added one goal to their score. The seniors tried their best at this stage but in vain. Within 10 minutes of close of play, at 5-55 P. M. the juniors added 2 more goals and the result was the juniors won the day by 5 goals against nil.

After the game was over the Principal of our College congratulated the winners and appreciated the effort made by the losers of the day. He pointed out how the seniors lost the day for want of combination. The same was the case when our College lost the tournament playing against Stanes High School. In that school the players remain at one place throughout the year, and have more regular practice in their respective positions in out door games. Thus every one knows how to do his part and when and how to pass the ball from one to another. Whereas in our College the players get hardly sufficient practice before entering the tournament. Players have to be picked at random and tried in various positions This year, especially, the College was much handicapped by the loss of one of its best players in the outside left which place should have been filled by the student Aiyyanna; he could not play in the tournament because of the fracture of his leg which took place in one of the Hockey matches. Consequently, we lost the tournament, and the Cup, won last year, had to be returned to Stanes High School the winners of the tournament. After his speech, the Principal requested Mrs. Wilson to give away the Cup presented by Mr. Cowley Brown, to the Captain of the winning team.

Mrs. Wilson kindly obliged by giving the Cup to M. M. Mandanna of the junior division.

The day ended with cheers for Mr. and Mrs. Wilson.

The teams were represented by the following.

Juniors.

Hebbar

(GOAL)

Poonacha. Bandari.

(BACKS)

Gopalakrishna Rao. H. R. Dutt. Hameed.

(HALF-BACKS)

Sithapathi Iyer. A. Narayana Rao. Mandanna. Hasinuddin. Bodas.

(FORWARDS)

Seniors.

Karumbiah. Raghavan. Ganapathi (Coorg). Manuel. Perera.

(FORWARDS)

B. N. Deva. Sankunni Nair. Venkatesam.

(HALF-BACKS)

Ganapathi (Northern Circle) S Ramalinga Iyer.

(BACKS)

Abyankar.

(GOAL)

T. P. PALANI KUMARAN,
Secretary.
Athletic Club.

Correspondence.

To

THE EDITOR.

Madras Forest College Magazine.

Sir,

Allow me some space in the "Rangers' journal" for a suggestion that came into my head lately.

You may know that the Madras Rangers' association in its Conference held in Madras recently, has passed a resolution to the effect, that since transfers, leave etc. of Rangers are not nowadays published in the Fort St George Gazette, and from it, in the Newspapers, a monthly Forest Gazette, containing these notifications may be issued by the Chief Conservator. It is well known how hard a Ranger has to work, and how hardly any time is left to him in the course of a day to read news-papers. But all Rangers usually go in for some newspaper or other, and the one chief object for this had hitherto been to peruse Gazette notifications and to keep one informed of the various changes that happen among brethren in the profession. Indeed I have seen many a Ranger open a newspaper, eagerly glance through Gazette notifications, and pass the paper on to some one else or have done with it for ever after. Some, I find have recently stopped their papers or changed them to Tri-weekly's and so forth simply because papers do not nowadays contain Gazette notifications. Thus you see the importancc attached to these Gazette notifications.

Now, to issue a monthly Forest Gazette will mean additional Staff and other things, which will, undoubtedly cost much, and the benefit conferred may not after all be proportionate to the money spent and the trouble taken; and it is here my suggestion, which is a via-media, comes in. Why incur heavy special expenditure, put up a separate office etc. etc., when we have already got "Our journal" What has got to be done is simple. Let copies of service orders issued by conservators and the chief conservator, be communicated then and there, to the Editor of the Madras Forest College Magazine. What has then to be done is simpler still, for the Editor has simply to put them in, in our journal.

The Government which will thus be saved considerably in money, time, and trouble, may grant an annual subsidy to the magazine for its undertaking this work for the Govt. But at this, one objection will jump, and it will be said that the above proposal is no remedy since the magazine is a quarterly one and news received after a quarter, will be too stale to interest Well, I have another suggestion.

The magazine can be converted into a monthly very easily. You know, if the proposal comes to pass, the Government will be paying something which I believe, will not be a mite. The present annual subscription for the magazine is miserably low—one rupee for a year. When we Rangers, started on rupees Fifty, and ended with one-hundred and fifty, it might have been reasonable. Now that we begin almost all of us with one - hundred (80 + 20) and are going to end at at least with 250/- it will be but doing the right to raise the subscription to at least 2/- per year, for junior Rangers, (vii. to iv. grade) and to 3/- for all Senior Rangers-(iiird grade to 1st grade.) I leave it to you, dear Editor, to work out the details and see whether the scheme is financially workable. But I know " where there is a will there is a way."

At this stage, I know my dear Editor will be up against me and say, " articles, what about articles! I do not get sufficient number of articles, even for quarterly issues." There is a weapon for that and that is, Organisation. I do not for one moment assume that it is absent at present, but that what exists is capable of vast improvement. To begin with, many an old Ranger whose Alma Mater is " the mother of Forest Colleges." Viz Dehra Dun College, complains that you are not treating them as Madras Rangers. Is it true that the Forest College does not invite them for its annual functions? Could they not in future at least, be asked to compete for the " College Essay Prize " here, they being Madras Rangers. If these distinctious, slight though they may be, were removed. it may result in more co-operation which will give a better organization.

Another thing: I have talked to many Rangers on the subject of articles for our magazine. All of them have something to write about and want to write them out sometime, but do not find "time" This want of time is mostly due to work. Writing an article is not so easy. One is conscious of the fact that people are more inclined to laugh at anything amiss, than to imbibe any new idea or fact that may be set forth. Writing to the press requires some practice too. Even allowing for all these, the want of time is also partly due to want of inciting influences. If this, my scheme, finds favour, as an auxiliary to it, to get articles and to keep the magazine going as a monthly, sub-editors may be appointed in different centres in the Presidency. I would suggest that six senior Rangers be nominated for the work at the rate of one for each circle There will be about 30 to 40 Rangers in a circle and the duty of the sub-Editor will be chiefly to write to or otherwise get in touch with the Rangers in the circle, and worry them for the articles I know there are many who for the mere asking, will send up articles and I know there are some others who will do it at least due to the importunity of the Sub-Editor. All that has to be done by the Editor, in the matter is to supply each Sub-Editor with sufficient stationery and Stamps. The sub editor could be helped by one or two assistant - editors, who should be young, energetic and enthusiastic Rangers. But these are all details and details can be worked out when the main scheme is accepted.

Now, dear Editor, I have unburdened myself and request all concerned to give some consideration to what I have said.

X. Y. Z

Miscellanea.

Saw Mill at Russelkonda.

(FROM THE PUBLICITY BUREAU)

The Government have approved the proposal of the Chief Conservator of Forests to establish a Saw Mill at Russelkonda in the Ganjam District to deal with timber extracted from the Government forests in the locality. The detailed management of the working of the Mill and the marketing of the produce will be entrusted to Messrs Parry and Company in accordance with the terms of a five year agreement which is terminable on six months notice by either party. The general policy of the undertaking will be controlled by a joint board consisting of two members nominated by Messrs Parry & Company and 3 representatives nominated by the Government who will be for the present (1) the Chief Conservator of Forests, (2) the Forest Utilization Officer and (3) the Conservator of Forests. Northern Circle.

Experience has shown that the forest resources of Ganjam can only be fully utilised if mechanical sawing is substituted for the slow and wasteful process of hand sawing. The mixed lot of forest timbers available do not command any ready sale at remunerative prices when dealt with by the customary rough and wasteful methods. The success of a steam sawmill in converting the various sorts and sizes of timber to hand into a marketable product will depend almost entirely on the proper use of up-to-date and elaborate machinery which can be operated only by experts in saw mill practice. It was for this reason that the Forest Department decided to invite the co-operation of Messrs Parry

& Company as this firm has the largest saw-mill experience in South India and possesses in the person of Mr. Brace Brooks one of the first experts in India in milling and marketing timber. Mr. Brace Brooks is now engaged in studying the latest saw-mill practice in America and Europe where there have been great developments in the timber industry since the war. He is to purchase the machinary required for the Russelkonda mill. It is expected that the mill will meet some part of the present very large and unsatisfied demand in the north of the presidency for timber sawn to definite dimensions and effectively seasoned. It is also hoped that private enterprise may be induced to consider seriously the possibility of setting up similar plants in other parts of the presidency if the use of a well equipped and modern saw mill proves a commercial success in Ganjam.

* * *

The Australian continent is one of the greatest hard wood producing areas in the world. It posesses about 500 species of Dicotyledonous timber trees, which though a low number considering the area of over three million sq. miles involved, comprises some that are extra-ordinarily abundant * * * * About 180 or nearly two-fifths of all the different kinds of timber that Australia furnishes are species of Eucalyptus. * * * The extraordinary variety and high commercial value of their wood cannot be equalled by any other group of trees, and the range of hardness, appearance, and technical qualities which they present are such as to furnish excellent substitutes for many timbers of commerce derived from a large range of genera & families.

The colour ranges from the pale, almost white, wood of E. fraxinoides, similar in character to European Ash, through the deep yellow box-like wood of E. milliodora, to the mahogany-like E. rostrata or the dark red-brown of E. redunca. The durability of some of the Eucalyptus is very great, a slab of E. paniculata, used in the construction of a stable being reported to have been in an excellent state of preservation after an exposure to the elements of over one hundred years!

Extracted from Science Progress for April 1920.

* * *

Decay of timber.

" Moisture and a certain amount of heat are indispensable conditions for decay of timber. Without moisture no growth of fungus can take place. Temperatures between 60° and 100° Fahr. appear most conducive to fungus life; it will not exist at freezing point, and in higher temperatures than above given appears to lose its vitality.

" Any kind of wood kept absolutely air-tight will not decay, as for instance, wood completely submerged in water. It was owing to absence of air and moisture that the mammoth was preserved for untold ages in the ice of the Russian rivers and the wonderful preservation of the wooden Egyptian Coffins and statues for 5000 or 6000 years is largely owing to the dryness of the Egyptian atmosphere * * * There are two sycamore coffins from Egypt, now in the British Museum, 4,400 years old, and in such good condition that even the colours of their ornamentation are still quite bright.

" Timber should never be painted or tarred before being properly seasoned, as by so doing we bring about the best conditions for cultivating the fungi whose spores were already there by providing them with a warm and moist chamber, and the interior of the wood will almost certainly be destroyed.

— Extract from "Timber" by J. R. Baterden

* * *

" *Ebony substitutes* : In Europe, the yew, and the Holly stained black are used as substitutes for ebony and occasionally the pear, and the Apple, and cognate woods. In the Philippines it was found that by staining the sapwood of the various Ebonies (Diospyros) not only is there a good substitute but a better material to work upon as it is tougher, and not so brittle nor so hard, and consequently the work is in reality finer."

Extracted from " Madras Timbers" by A. W. Lushington.

* * *

Sunflower oil.

" The oil extracted from the seed is considered to be superior to both almond and olive oil for table use and is generally used as a substitute for these in domestic cookery. It is very palatable and without refining makes an excellent salad dressing. It has recently been substituted for fixed oils in the making of margarine and is also used in its adulteration.

The chief industrial applications of the oil are for lighting, candle and Soap making etc. For illuminations it burns the longest of any in equal quantities. It is also employed for the manufacture of Varnish, and valued as a lubricator for the delicate machinery of textile fabrics ; it was once found by the Ordnance Department to answer all the purposes required in the arsenal. It is however at present very little used as a paint vehicle although it appears to possess great possibilities in this direction. It possesses very fair drying properties and is used to some extent as a paint oil in America instead of linseed oil."

— Extracted from the "Industry" for June 1920.

* * *

Lemon Grass oil:— The extraction of the essential oil contaitded in lemon grass (Cymbopogom Citratus) is an industry of considerable promise in Southern India as the oil which contains a large percentage of *Citral* is utilised largely in the manufacture of soaps, and artificial scents. Cultivation may be described as a monopoly of the west coast of the Madras Presidency. the main producing areas being the Native states of Travancore and Cochin and the southern part of the Malabar district Lemon grass is both wild, and cultivated. The hill sides on which it flourishes are fired in January The first crop. is ready to be harvested in July, and the season for distillation extends to October, furnaces and stills being set up in the neighbourhood of the plantations. The method of distillation is generally crude, and the resultant oil highly coloured, and so adulterated that the citral content seldom exceeds 50% as compared with 83% in the pure article. The trade which was inconsiderable until the beginning of the present century received a great impetus about 1903—04, but the temptation of high prices encouraged crude methods of distillation and subsequent adulteration, and when the demand in Europe was discovered to be unequal to the absorption of the quantity which Travancore and Malabar were prepared to export, a fall in prices which followed made distillation scarcely profitable. There was some revival again before the war, both in prices and in the volume of the trade, and private efforts supplemented by those of the Travancore Darbar to obtain a better quality of oil have proved that there is steady and increasing demand in Europe and America for the purer product which is yielded by redistillation. Travancore oil used in pre-war times to be shipped either from Alleppey or Cochin.

The principal pre-war destinations were France, which accounted for more than 50 % of the total, Germany, the United Kingdom, and the United States, and the war has not made any material alteration in the distribution of the trade, except that Germany has been eliminated and a new market apparently found in Switzerland.

The unit of sale on the West Coast is a dozen bottles of 22 oz each, the unit in Madras being the lb. * *

— Extract from "Hand book of Commercial information for India"

* * *

The following is a statement of the ratio of ingredients for the mixing of primary colours in order to produce secondary colours, as determined by Mr. A. Seshagiri Rao, M. R. H. (1917—19.)

(A) Primary colours :—

(1) Blue = Ultramarine.
(2) Red = Crimson - lake.
(3) Yellow = Yellow - Ochre.

(B) Secondary colours :—

(1) Green = Blue + Yellow = 1: 1
  (a) Dark green = Blue + Yellow = 2: 1
  (b) Sap green = Blue + Yellow = 1: 2

(2) Orange = Yellow + Red = 1: 1
  (a) Gamboge = Yellow + Red = 3: 1
  (b) Light red = Yellow + Red = 1: 2
    (Vermillion)

(3) Violet = Blue + Red = 1: 1
  (a) Indigo = Blue + Red = 2: 1
  (b) Dark red = Blue + Red = 1: 2
  (c) Blood red = Blue + Red = 1: 4

(C) Compound colours.

(1) Brown = green + red = 1: 2
(2) Indian red = green + red = 1: 3

Colours of the rain bow:-

VIBGYOR.

V = Violet = Blue + Red = 1: 1
I = Indigo = Blue + Red = 2: 1
B = Blue = Ultramarine
G = Green = Blue +, Yellow = 1: 1
Y = Yellow = Yellow - Ochre
O = Orange = Yellow + Red = 1: 1
R = Red = Crimson - lake.

White = V + I + B + G + Y + O + R if primary colours are pure.

Colours of the same consistency (to be judged by the eye) must be used and the above table will hold good when there is no chemical action. For instance, lime + termeric = red and also red juice of pricklypear + lime = Yellow.

Contributions to the Gass Museum.

Serial No.	Contribution.	Contributor.
1	One billet of *Erythroxylon Monogynum* and 3 bark samples.	M R. Ry Rama Rao Kini Range officer Bhavani.
2	Two bark samples.	M R. Ry K. Venkatramanan, Range Officer, Satyamangalam.
3	Long panels of (*i*) *Adina cordifolia* (*ii*) *Dillenia pentagyna* and 25 bark samples.	W G. Dyson Esq D. F. O. S. Coimbatore,
4	Six bark samples.	M. R. Ry. J Sadasiva Ayyar Avl, D. F O. S Mangalore.
5	Five botanical specimens.	R. S Hole Esq. Imperial Forest Botanist Dehra Dun
6	Four photographs of a Sandal tree	A. M. C Littlewood Esq. D F. O Chittoor.
7	One bouquet made of cloves, cardamoms, pepper etc.	J. Shortt Evers Esq.
8	Four bark samples.	M. R. Ry. Rao Sahib K. R. Venkatramanier Avl. Forest Research officer.
9	Seven timber sections and five bark samples	Mr. A. Nicholas Range officer, Ooty.
10	One grass mat.	M. R. Ry. P. Sankunni Menon Range officer Olavakkot

List of books received for the Madras Forest College Library from 20—11—20 to 25—2—1921.

A, **General Library :—**

1. A Manuel of the Timbers of the World :— (*By Alexander L. Howard.*)
2. A Hand book of Forestry.
3 Fauna of British India. *Diptera Prachycera* Vol. I Brunetti.
4 Transactions of the Bose Research Institute, Calcutta: Vols. I & II.

Life Movements in Plants (*By Sir Jagdish Chander Bose.*)

5. The Flora of the Nilgiri and Pulney Hill Tops Vol III (*By P. F Fyson, Esq, B. A, F. L. S.,*
6 Note on a visit to the Nilambur Teak Plantations in Madras Presidency, (*by Rodger.*)
7. Report of the Director of Forestry for the years 1914 to 1919.
8. Calender of Forest Research Institute and College Dehra Dun; 1919.
9. Annual Progress Report on Forest Administration in the Province of Behar and Orissa for 1918—19.
10. Statement prepared for the British Empire Forestry Conference 1920.
11. Progress Report of Forest Administration in Coorg for 1918—1919
12. Proceedings of the Revenue Department (Forest) Dec. 1919
13. do do Jan. 1920.
14. Report of the Forest Department for the year ended 30th June 1920.
15. Note on a Tour of Inspection in the Goalpara (Assam) Buxa Jalpaiguri, Kalimpong and Kurseong Forest Division (Bengal) 11th January 1920.
16. Progress Report of Forest Administration in the Province of Assam for the year 1918—1919.

17. Progress Report on Forest Administration in the Punjab for 1918—1919.

18. Report on the Forest Administration in Burma for the year ending 30th June 1919 and Quinquennial Review received for the period of 1914—15 to 1918—1919.

19. Report on the measurement of rates of Growth of Casuarina in the Nellore District.

20. Public Works Department Appendix A.-H. to Standard specifications in the Madras Presidency.

B. Students' Library.

1. Recruiting in the Madras Presidency (Before and during the War 1914—1918.)
2. The Great War Vol. X Part 168.
   do Parts 188 to 192
   do XII Parts 227 & 229 to 242.
3. The Times History of the War Part 13 Nov. 1917.
4. The Times History and Encyclopaedia of the War Part 105 Vol. 9. August 22nd of 1916.
   do Parts 105 Volume 9 September 12—1916.

Students' Club Fund

Statement showing amounts promised and still due by old students, towards the Students' club :—

	Rs.	A.	P.		Rs.	A.	P.
Mr. C. S. Ramanathan	10	14	0	Mr. P. Krishnan	10	0	0
„ M. R. Doraiswami	3	0	0	„ T. E. Varadhachari	15	0	0
„ Kerala Varma	10	0	0	„ K G. Sundararaja Rao	10	0	0
„ C. M. Kunhiraman Nair	5	0	0	„ K. G. Sreenivasa Rao	10	0	0
				„ M Krishna Ayyar	10	0	0
„ Gulam Dustagir	9	0	0	, S. V. Sigbhatullahi	10	0	0

	Rs.	A.	P.
„ S. A. Dawson	11	0	0
„ N. T. Tambi	4	0	0
„ P. Karunakara Menon	9	0	0
„ Dhananjeya Rao	13	0	0
„ Kesava Pillai	12	0	0
„ I. Ramalingam	8	0	0
„ L A Krishna Ayyar	7	0	0
„ S Krishna Ayyangar	15	0	0
„ T. K. Parameswaram Pillai	15	0	0
„ Gulam Rassool	10	0	0
„ T. R. Naganatham	10	0	0
„ W. Balakrishna Mudaliar	10	0	0
„ Aiyappa Asari	15	0	0
„ D. Patel	18	0	0
„ K Jayaraman	12	0	0
„ P. V. Ramanna Rao	12	0	0
„ R. E. Lemos	50	0	0
„ B. V. Nagaraja Ayyar	10	0	0

Gazette Notifications.

2nd November 1920.

The D. F. O.'s action in having posted Swaminatha Ayyar, Ranger II grade, to Ambasamudram range, *vice* Ranger Lemos granted privilege leave for one month is approved.

The D. F. O.'s action in having directed the Range Officer, Tinnevelly range to take charge of the Cattle - capturing operations in Vallanad reserve from Ranger Swaminathier is also approved.

M. R. Ry. K. Kunhiraman Menon Ranger VII grade, S. Coimbatore division is granted privilege leave for 2 months from 23—10—1920 with permission to suffix the Christmas holidays to his leave.

9th November 1920.

Mr. A. B. Myers, D. F. O. Anantapur, granted privilege leave for 4 months with effect from or after 1st Nov, 1920.

M R. Ry V. N. Seshagiri Rao Avl. E. A. C. doing duty under the D. F. O. S. Vellore, to act as D. F. O. Anantapur, during the absence of Mr A. B. Myers on leave or until further orders.

M. R. Ry. A. Sidda Pillai posted to the charge of Udayagiri Range, Nellore district.

M. R. Ry. C. R. Rajagopalan posted to charge of Vontimitta range, W. Cuddapah dt.

M. R. Ry R. Alagirisami Naidu, to Sriharikota range, Nellore dt.

M. R. Ry P. S. Varadakrishnamachari, to Mamandur Range. Chittoor dt,

M. R. Ry. B. V. Vaideswarier to Satyavedu Range Chingleput dt.

M. R. Ry. D. Venkateswarlu probationary ranger to be assistant range officer, Mamundur range.

Mr. Abdul Rahim Khan to be assistant range officer, Satyavedu Range.

M. R. Ry. P Chengal reddi, probationary ranger attached to South Cuddapah dt. granted one month's privilege leave from the date of availing himself of the same.

16th November 1920.

Mr. H. A. Latham, Conservator of Forests granted an extension of furlough for 7 days from 31st Oct. 1920

Mr. Saiyid Riazuddin Sahib, Pro E. A. C. Nellore dt. posted to Udayagiri range, in relief of Ranger C. R. Rajagopalan who is posted to the charge of Vontimitta Range and is to hold charge of the same till relieved by Ranger A. Sidda Pillai on return from leave.

30th November 1920.

Mr. B. F. Rigold, acting Conservator of forests, combined leave for one year with effect from the 18th October 1920.

The following postings of Forest Officers are ordered consequent on the grant of leave to Mr. B F. Rigold :—

(1) Mr. H. C. Bennet, Ag. Conservator of Forests, Central Circle to be in charge of S. Circle in addition to his own, until relief by Mr, J. S. Scot.

(2) Mr. J. S. Scot D. F. O. South Coimbatore to act as Conservator S. Circle until relief by Mr. H. A. Latham.

(3) Captain W. G. Dyson, M. C. B. Sc. Assistant Conservator attached to the Nilgiri division to be D. F. O. South Coimbatore until further orders.

The following postings are ordered consequent on the return of Mr. H. A. Latham from leave :—

(1) Mr. H. A. Latham to be Conservator South Circle.
(2) Mr. J. S. Scot to be Conservator Central Circle.
(3) Mr. H C. Bennett to revert as Chief Forest Officer, Coorg.
(4) Mr. E. M. Crothers to be D. F. O Ganjam.
(5) Saiyid-ud-din Ahmed Sahib Bahadur to act as D. F. O. Krishna.

M. R. Ry P. Govinda Menon Avl. posted to the charge of the Palghat Range.

7th December 1920.

Mr. P. W. F. Walpole, E. A. C. Ganjam, extension of privilege leave for two months from 7—10—20.

14th December 1920.

The furlough of two years granted to Mr. G F. F. Foulkes, Dy. Conservator of forests from 3—5—19 will be commuted into privilege leave for 5 months and 2 days, furlough on average salary for 4 months, and furlough on half average salary for one year two months and 28 days

Mr. R. F. Colaco, E. A. C. of forest, Coorg, is permitted to retire from service with effect from 1—5—21.

Mr. A. R. Brand, E. A. C. of forests on probation, transferred from Lower Godaveri to Russelkonda in Ganjam Dt. for duty under the D. F. O.

21st December 1920.

M. R. Ry. P. Govinda Menon Avl. is confirmed as E. A. C. of Forests with effect from 26—3—1919.

The following posting of a **Forest Officer** is approved :— Mr. H. F. A. Wood, on return from leave, to be conservator of Forests Western Circle.

4th January 1921.

Mr. A. A. F. Minchin, Ag. Conservator Northern Circle is granted combined privilege leave and furlough on average salary for 5 months with effect from 15th January 1921 or date of relief, and furlough on half average salary for 7 months in continuation thereof.

Mr. A. B. Jackson, on return from leave to act as Conservator Central Circle until further orders.

M. R. Ry. P. Govinda Menon Avl. E. A. C. granted furlough for one month in continuation of the privilege leave already granted to him.

11th January 1921.

Mr. H. Tireman, on return from leave to act as Conservator of forests Norther Circle.

Mr. C. M. Kushalappa, Probationary E. A. C. transferred from West Vellore to Central Salem division and posted to charge of the Shevroys West range with Head quarters at Kadiampatti.

25th January 1921.

Mr. G. C. Robinson D. F. O. South Malabar, granted combined privilege leave and furlough for six months and twenty days with effect from 10—1—21.

M. R. Ry. S. Ramasamier, Ranger I grade to be Extra Assistant Conservator of Forests on probation with effect from the date of retirement of Mr. T. N. Hearsey, E. A. C.

Mr. C. E. C. Fischer on relief by Mr. H. F. A. Wood to be on special duty in connection with the re-organisation of the Nilghiri division, until further orders.

Mr, J. S Scot, on relief by Mr. A. B Jackson to be on special duty under the Conservator of Forests, Central Circle to, investigate and report on the question of fire protection of the Cuddapah forests, until further orders.

Mr. A. A. F. Minchin on relief by Mr. H. Tireman to be on special under the Conservator of forests, Northern circle to report on the Parlakimedi Agency forests.

Mr. F. D. Ardagh Assistant Conservator of forests working under the D. F. O. Nilghiris, to act as D. F. O, South Malabar and to be in charge of the Nilgiri district in addition, with effect from or after 10th January 1921.

1st February 1921.

M. R. Ry. S. V. Devadasan Avl. E. A C., on return from leave, to be Dt. Forest Officer, Chingleput.

M. R. Ry. M. C. Chandy Avl, E. A. C. and Dt. Forest Officer, Chingleput on relief, to be District Forest Officer, South Malabar.

Mr. T. A. Whitehead, Dy. Conservator of Forests, on return from leave tc be Dt. Forest Officer, the Nilgiris.

Mr. A. Wimbush, Dy. Conservator of Forests, on return from leave to be Dt. Forest Officer, Ganjam.

Mr. E. M. Crothers, Extra Dy. Conservator of Forests. and D. F. O Ganjam, on relief to be D. F. O. Kurnool West.

Mr. R. Mitchell, E. A. C. and D. F. O. West Kurnool Division, on relief, to be D. F. O. Upper Godavari Dn.

8th February 1921.

M. R. Ry. J. Sadasiva Ayyar Avargal, District Forest Officer, South Mangalore, is granted privilege leave for 3 months from date of relief.

(The District Forest Officer, North Mangalore, will be in charge of the South Mangalore division in addition to his own during the period or until further orders).

Mr. C. D. McCarthy, Conservator of Forests, is granted an extension of urlough on half average salary up to 24th June 1921.

15th February 1921.

1. M. R. Ry. Rao Sahib K. R. Venkataramana Ayyar Avergal, Forest Research Officer, Coimbatore granted privilege leave for 3 (three) months from 1st March 1921 or date of relief.

2. Muhammad Abdul Aziz Sahib Bahadur, Overseer, under the forest Engineer. on the construction of Komittiyeri Patrakad road duty, granted privilege for 15 days from 5—2—21 or date of relief

22nd February 1921.

1. The services of Mr P. W. F. Walpole, Extra Assistant Conservator of forests are placed at the disposal of the Chief Commissioner of Coorg from 1st April 1921.

2. Mr. W. C. Hart, E. A. C. on return from leave to act as Forest Research Officer Coimbatore, Vice M. R. Ry., Rao Sahib K. R. Venkataramana Ayyar on leave or until further orders.

3. Mr. H. A. Latham, Conservator of Forests, Southern Circle, to be Conservator of Forest IV Circle.

4. Mr. H. F. A. Wood, Conservator of Forests, Western Circle, to be Conservator of Forests V Circle.

5. Mr. A. B. Jackson, Conservator of Forests, Central Circle, to be Conservator II Circle.

6. Mr. H. Tireman, Conservator of Forests, Northern Circle, to be Conservator VI Circle.

7. Mr. C. E. C. Fischer, acting Conservator of Forests, to act as Conservator III Circle. (Separate orders to be issued on the temporary head-quarter of this Circle.)

8. Mr. J S. Scot, acting Conservator of Forests, to act as Conservator I Circle.

9. Mr. A. B. Jackon, acting Conservator of Forests to be Conservator from 3rd January 1921 *vice* Mr. H. B. Bryant retired.

10 Mr. C. M. Hodgson, acting Conservator of Forests on leave, to be Conservator from 19—1—'21.

11. Mr. H. Tireman, acting Conservator of Forests to be Conservator from 19—1—'21.

12. Mr. C. E. C. Fischer, Deputy Conservator, on special duty to act as Conservator from date of taking Charge *vice* Mr. C. D. McCarthy on leave or until further orders.

13. Mr. J. S. Scot, Deputy Conservator of Forests on Special duty, to act as Conservator, from date of taking charge *vice* Mr. C. M. Hodgson on leave or until further orders.

Advertisements.

The following is a list of timber species required for the Gass Museum. Such of them as are procurable may be sent to the Principal *together with botanical specimens pertaining to each species and a sample of bark about 8″ square.*

The long panels should be as broad as available, 6 ft long and 3″ thick. The short panels 2 ft long and 1″ thick. (breadth, maximum available.)

- Aglaia Roxburghiana
- Albizzia procera
- Albizzia stipulata
- Acacia dealbata
- Acrocarpus fraxinifolius
- Chickrassia tabularis
- Carallia integerrima
- Dillenia indica
- Diospyros tomentosa
- Diospyros paniculata
- Diospyros ebenum
- Dalbergia sissoo
- Erythroxylon monogynum
- Gmelina arborea
- Gluta travancorica
- Grewia asiatica
- Hardwickia binata
- Holoptelea integrifolia
- Hydnocarpus Wightiana
- Hereteria papilio
- Litsaea zeylanica
- Machilus macrantha
- Michelia Champaca
- Premna tomentosa
- Sterculia fœtida
- Sterculia villosa
- Sterculia guttata
- Stereospermum chelonoides
- Tetrameles nudiflora

* * *

The following numbers of the Indian Forester are required for the *Students'* Library. The Principal will be glad to receive any that officers can spare :—

1. Volume 1, 2 and 3 for 1875 – 76, 1876 - 77 ; and 1877 - 78.
2. Volume 6 for 1880 - 81.
3. Volume 14 for 1888 - January, February, March, April, September, October, and December numbers.
4. Volume 15, 16, for 1889 and 1890.
5. Volume 18 for 1892 August, September, October, November
6 Volume 19 for 1893 February number.
7. Volume 20 for 1894 July and August numbers.
8. Volume 21 for 1895.
9. Volume 24 for 1898 March and April numbers.
10. Volume 25 for 1899 April, May, June and August, September, October and December numbers.
11 Volume 26 for 1900 August number.
12. Volume 39 for year 1913 - Junuary, April, September and October Nos.
13. Volume 44 for the year 1918 - March number.

* * *

Wanted to purchase.

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* * *

The Principal will be glad to purchase copies of the undermentioned numbers of the Madras Forest College Magazine at 8 annas each:-

Volume I. All the four numbers.

Volume II No 1.

The Principal will be glad to receive trophies for the Gass Museum either as a permanent gift, or, on loan for not less than 18 months ; also any old records, maps, etc. of historical interest to the Department, for the College Library.

* * *

Wanted

The following numbers of the Standard history of the War:—

Volume *X*. No. 168

Volume XI. Nos. 188 to 192

Volume XII. Nos. 227 to 242

PRINCIPAL MADRAS FOREST COLLEGE,
Coimbatore.

* * *

Indian Forester Prize. 1921

The subject for the above prize for the current year will be :-

" The Teak Tree."

Special emphasis should be laid on concrete examples taken from actual experience.

The Prize is open to all present Students of the College. A prize for an essay on a different subject has also been allotted for all past Madras Forest College students.

No award for either prize will be made unless a satisfactory standard is reached.

The Essays should be clearly written or typed *on one side of the paper only* and must reach tne Principal not later than 1st June 1921. Essays should not exceed 2000 words; in previous years students have been disqualified for infringing this rule. Each Essay must bear a motto; the motto is also to be written on a sealed envelope containing the name of the competitor; the name of the competitor is *not to be written on the Essay.* Each Essay must be the bonafide unaided work of the Competitor submitting it.

* * *

A prize allotted from the "Indian Forester" Fund will be awarded to the past student of the Madras Forest College who submits the best Essay (limited to 2000 words; in previous years students have been disqualified for infringing this rule) on the following subject :—

" Business Methods in Foresty."

No award will be made unless a satisfactory standard is reached.

The Essay should be clearly written or typed *on one side of the paper only* and must reach the Paincipal, Madras Forest College not later than 1st June 1921.

Each Essay must bear a motto; the motto is also to be written on a sealed envelope containing the name of the competitor and a statement to the effect that the essay is his bonafide unaided work; the name of competitor *is not to be written on the Essay*.

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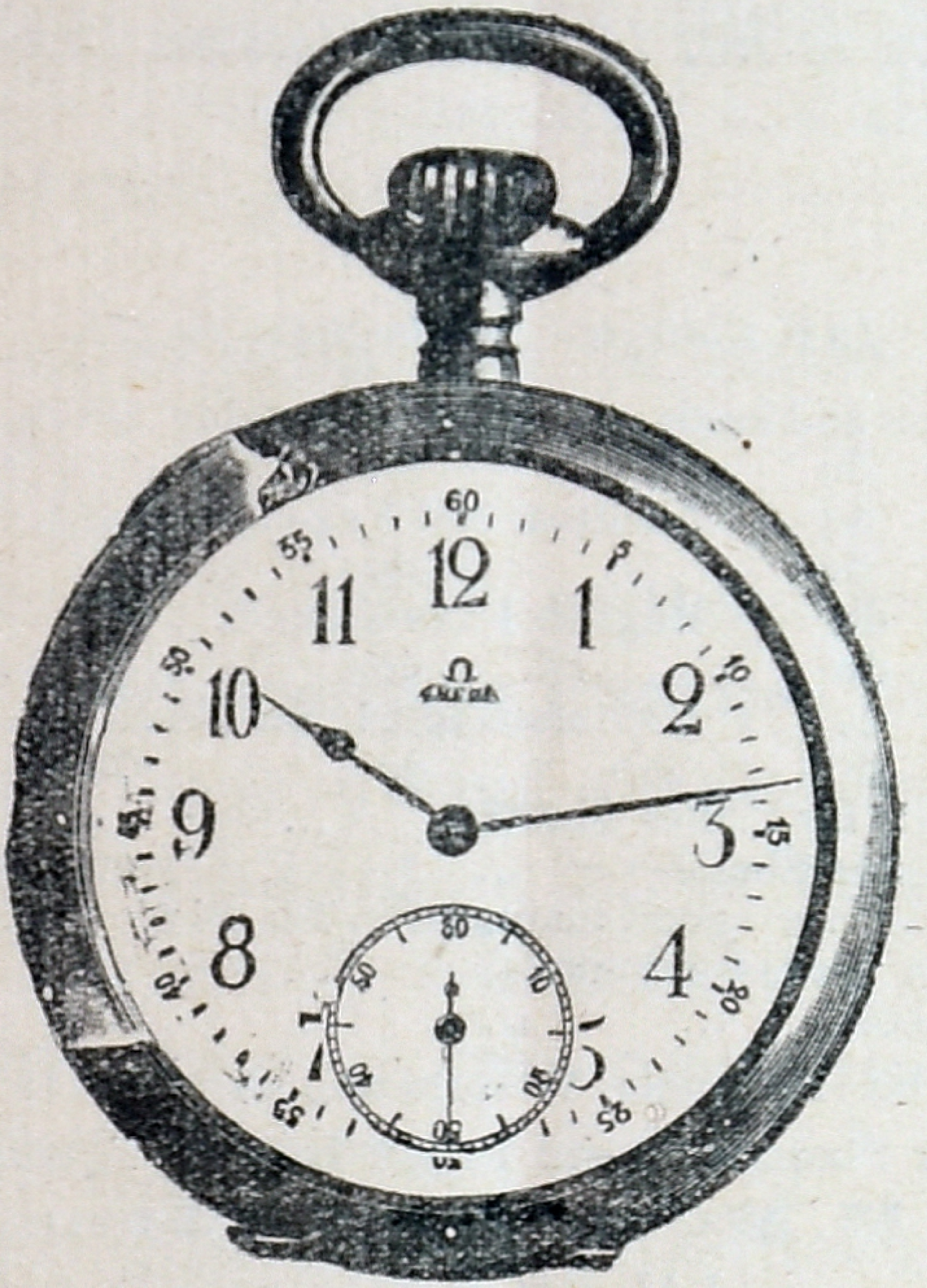

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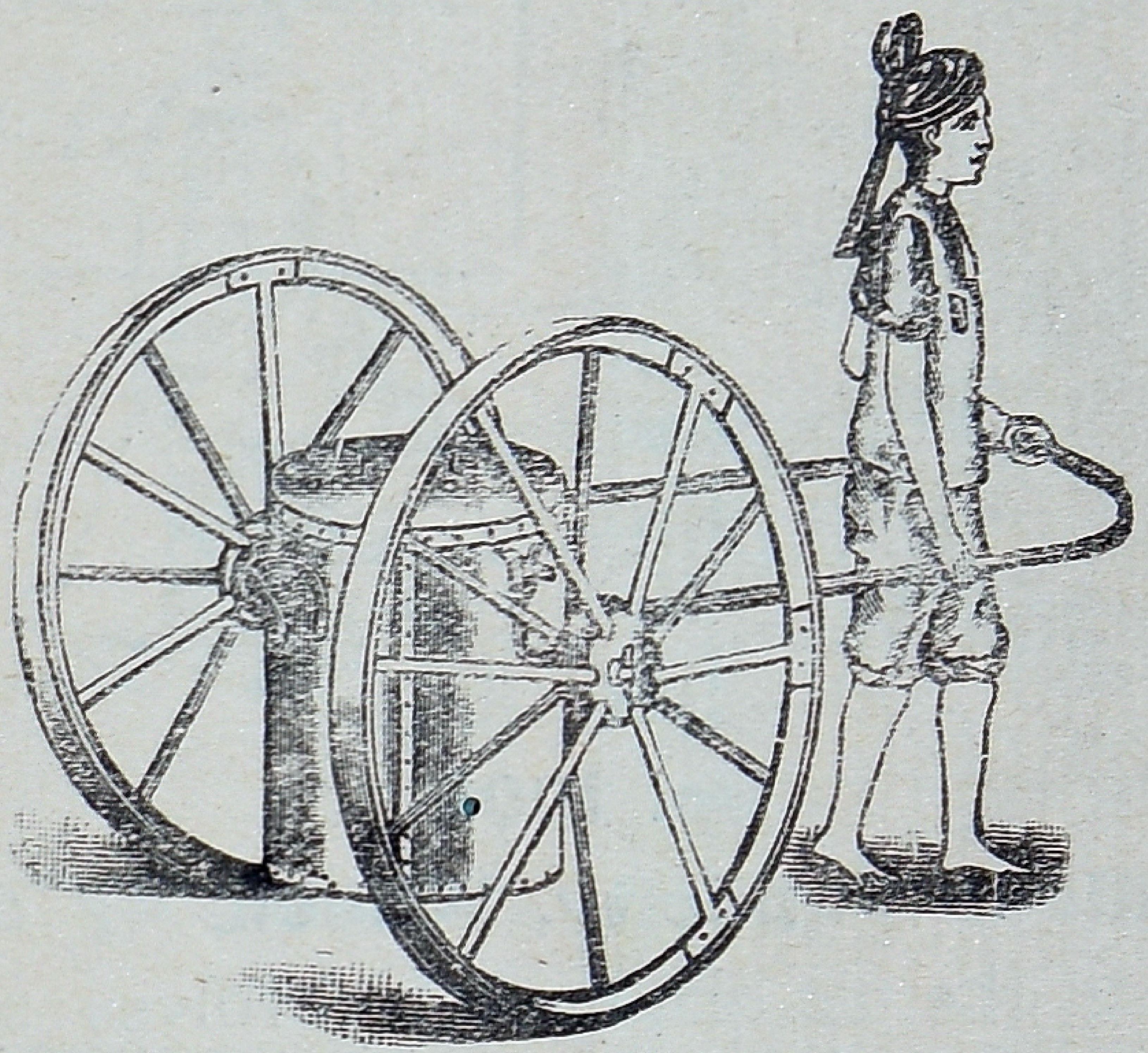

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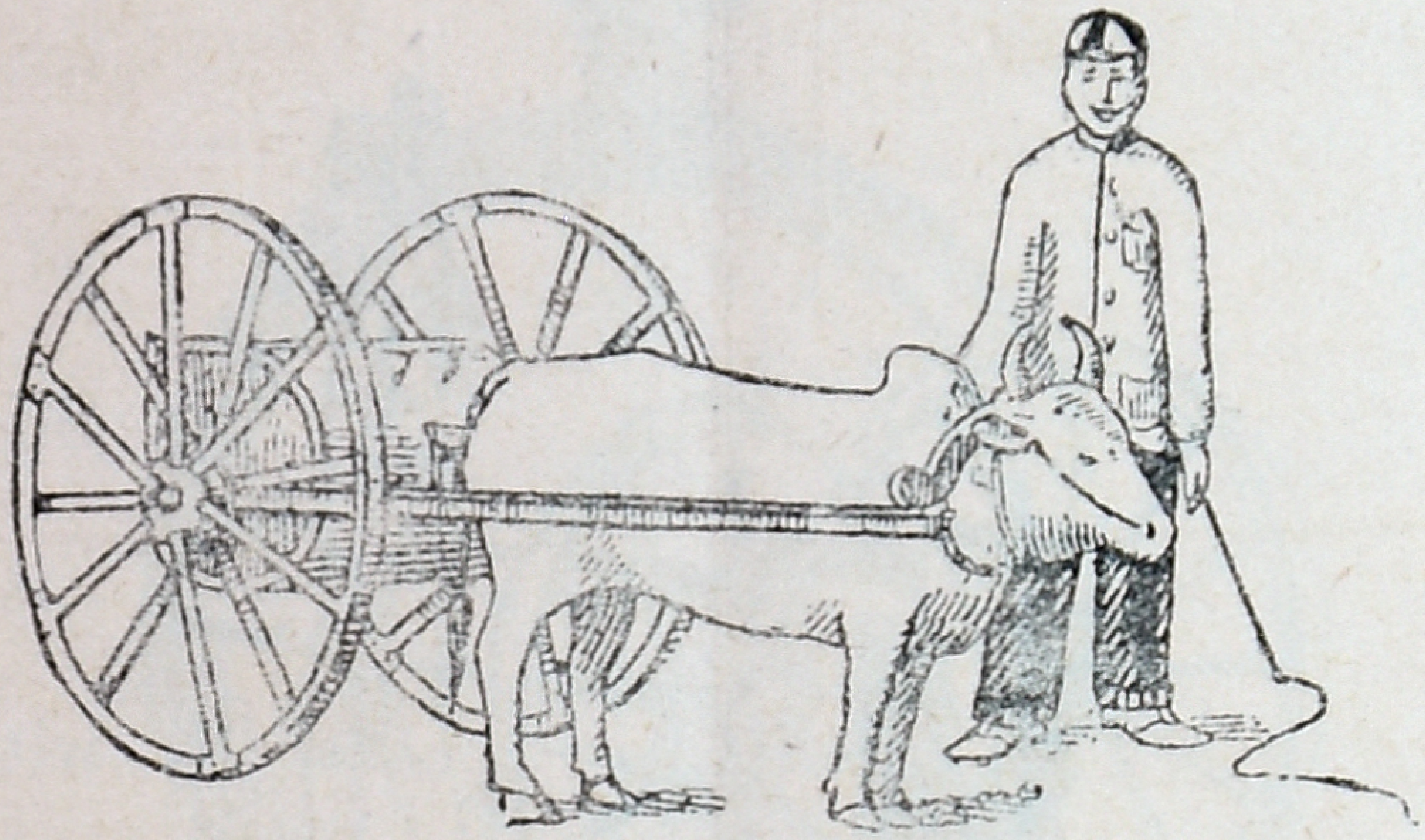

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